

MIDEA LCAC 50Hz R410A DC Inverter

Service Manual

2011

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※The specifications, designs, and information in this book are subject to change without notice for product improvement.

Part 1

General Information

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Model Names of Indoor/Outdoor Units

1.1 Indoor Units

R410A (capacity multiplied by 1000Btu/h)

Type	Function	36	48
Four-way cassette	Cooling and heating	√	√
Duct	Cooling and heating	√	√
Ceiling & floor	Cooling and heating	√	√

1.2 Outdoor Units

Model of outdoor unit and corresponding indoor unit

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
MOUB-36HDN1-Q	Rotary DC Inverter	GUANGZHOU MITSUBISHI	MTB-36HWDN1 MUB-36HRDN1 MCC-36HRDN1
MOUB-36HDN1-R	Rotary DC Inverter	GUANGZHOU MITSUBISHI	
MOU-48HDN1	Rotary DC Inverter	GUANGZHOU MITSUBISHI	MTB-48HWDN1 MUB-48HRDN1 MCC-48HRDN1
MOUB-48HDN1-R	Rotary DC Inverter	GUANGZHOU MITSUBISHI	

External Appearance

2.1 Indoor Units

Duct



Ceiling & Floor



Four-way Cassette



2.2 Outdoor Units

MOUB-36HDN1-R



MOUB-36HDN1-Q,
MOU-48HDN1, MOUB-48HDN1-R



Nomenclature

1.1 Indoor Unit

M U B - 18 H R D N1

Refrigerant Type
N1 R410A

DC Inverter

Control Mode
R Remote Control

Function Code
C cooling Only
H cooling & Heating

Capacity (1 1000Btu/h)

Product Series
A First Time Design B Second Time Design
C Third Time Design

Product Category
C Cassette Type F Console Type
T Duct Type
U Ceiling & Floor Type
H High Static Pressure Duct Type

Midea

3.2 Outdoor Unit

M O U D - 60 H D N1- R

Power Supply
R 380~415V, 3N, 50Hz
-- 220~240V, 1N, 50Hz

Refrigerant
N1 R410A

DC Inverter

Function Code
C cooling only H cooling & heating

Capacity (1 1000Btu/h)

Product Series
A Time A Designed B Time B Designed
C Time C Designed D Time D Designed

Universal Outdoor Unit
O Outdoor unit U Universal

Midea

Features

4.1 Universal outdoor unit design

Indoor unit with the same capacity can match with the same outdoor unit.

4.2 High efficiency and energy saving.

Thanks to the DC inverter technology and optimized piping system, the EER and COP of whole series can easily reach A-class.

4.3 Low noise and low starting current.

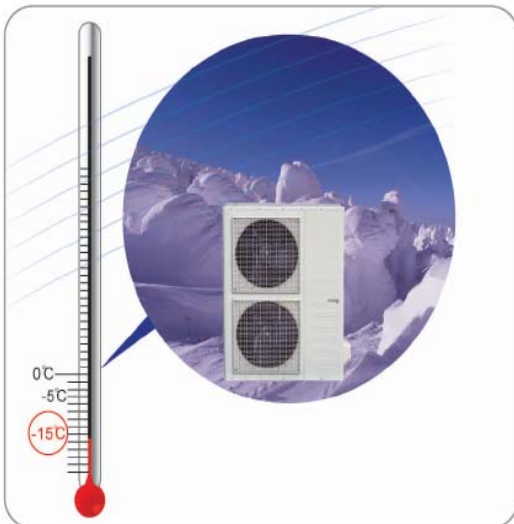
Thanks to the DC inverter technology, the system can work with low noise, and very small starting current.

4.4 Intelligent refrigerant adjustment technology.

Throttle part is made up of capillary and electronic expansion valve (EXV). The outdoor unit can output the most accurate capacity in any condition.

4.5 Working in cooling mode under -15°C.

Outdoor unit built-in with low ambient kit, it can control the outdoor unit's fan and cooling can be performed throughout the year for computer rooms, banquet halls, etc. Wide operation range covers outdoor temperatures as low as -15°C for cooling.



4.6 Indoor & outdoor unit's power supply is separate.

4.7 All indoor units have network control function.

4.8 All indoor units have Auto-restart function.

Part 2

Indoor Units

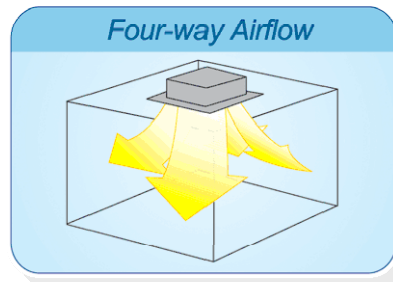
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Four-way Cassette Type

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1. Features

- (1) Low operation noise
 - Streamline plate ensures quietness
 - Creates natural and comfortable environment
- (2) Efficient cooling—Equal, fast and wide range cooling



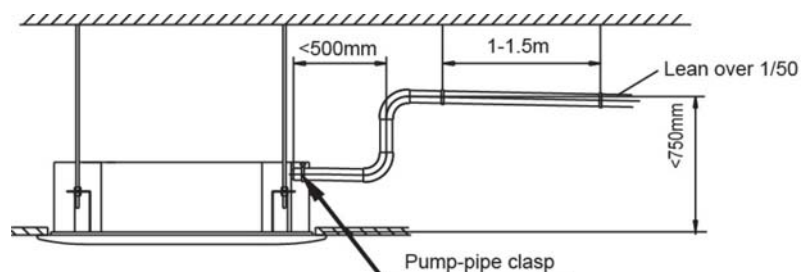
- (3) Excellent performance. The optimal evaporator & sufficient airflow volume guarantees the excellent capacity
- (4) The adoption of the most advanced 3- Dimensional Screw fan
 - Reduces the air resistance passing through
 - Smoothes the air flow
 - Makes air speed distribution to the heat exchange uniform



- (5) Fresh air makes life healthier and more comfortable.



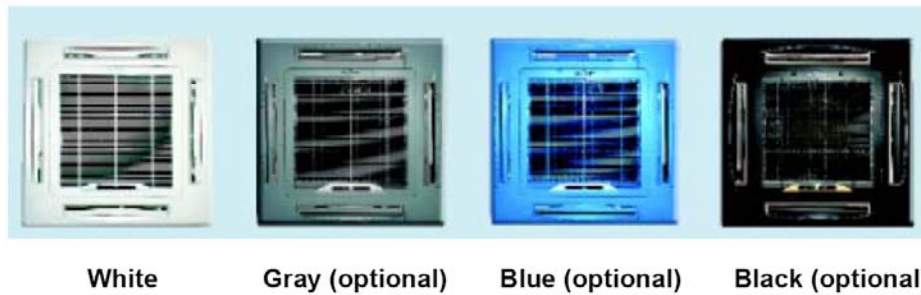
- (6) Drainage pump can take up the condenser water to 750mm.



- (7) Ultra thin machine body to easy installation and maintenance. 18K~24K:230mm, 36~48K:300mm.

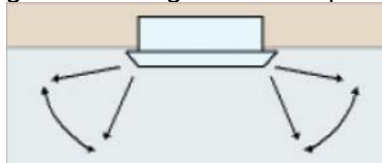


(8) Different color panels for choose: White、Gray、Blue、Black

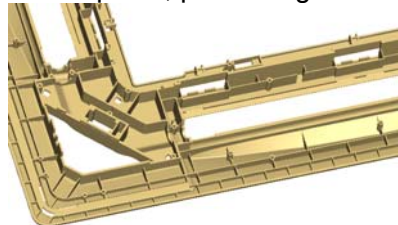


(9) Swing angle of louver

- 1) Add one more swing motor, one motor driving two louvers. Controlling the interspace of each part, minimizing the angle loss.
- 2) The swing angle of the first louver are 40~42 degrees and the second louver are 37~38 degrees. New evaporator and inner configuration designed can acquire high heat-exchanger effect.

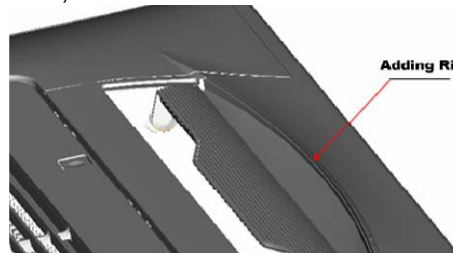


(10) More strengthening rib design around the panel, preventing the distortion for the panel.

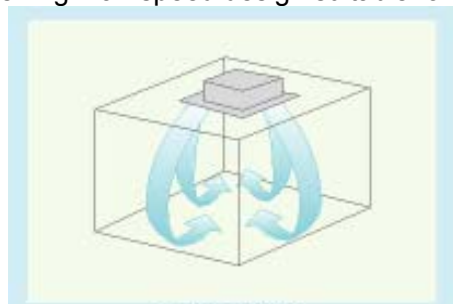


(11) New outlet frame design to make the phenomena of coagulation great improvement: prevent the condensing water from damaging the air guide strip.

(12) Adding rib on the panel of fan outlet, which can avoid the air outlet direct flow to people.



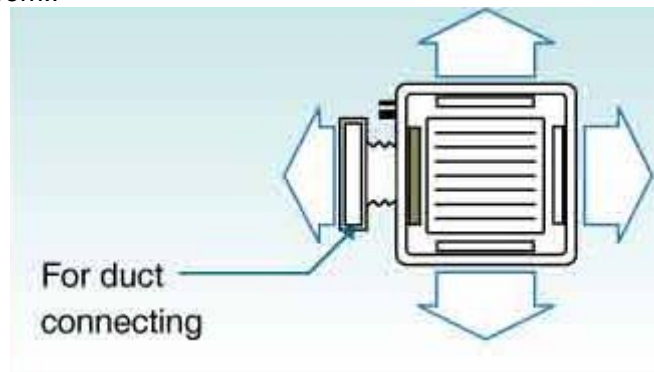
(13) 4 speeds available, optional super high fan speed design suitable for the large building over 3m high.



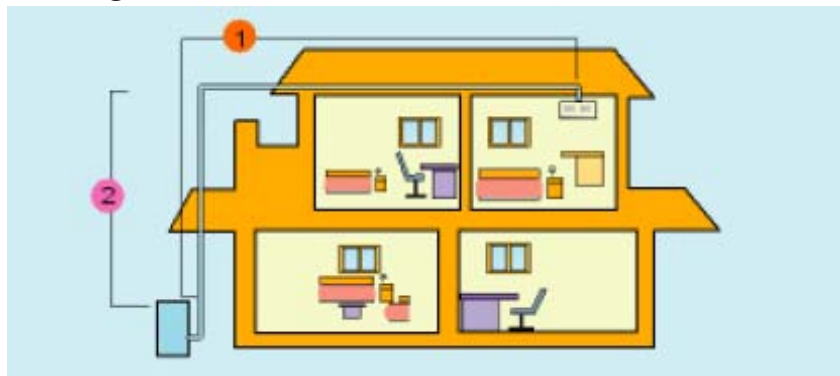
(14) Adding digital tube displaying on the display board. LED can display the Error Code to make the malfunction checking easier.



- (15) Reserve spaces for air side-outlet, it is available to connect duct pipe hence air supplying from the four sides to nearby small room..

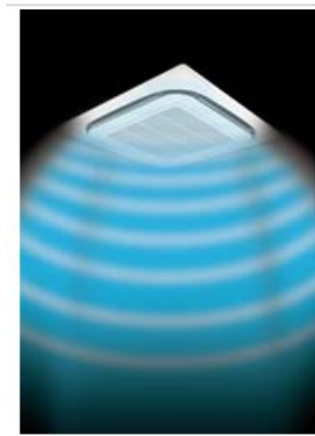


- (16) The connecting pipe and drop height is higher. Max. pipe length up to 50m (refer to ①), and Max. drop height up to 30m (refer to ②) .

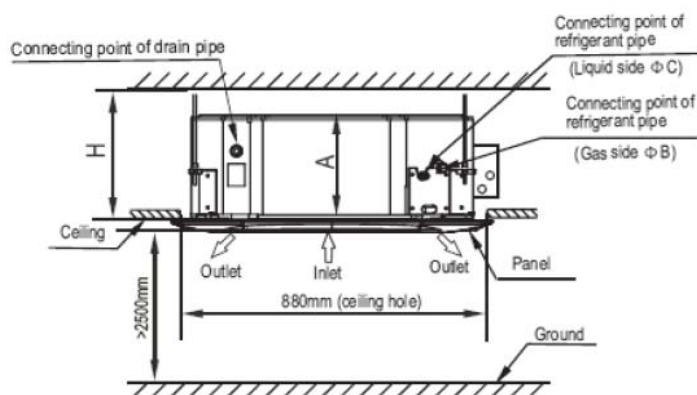
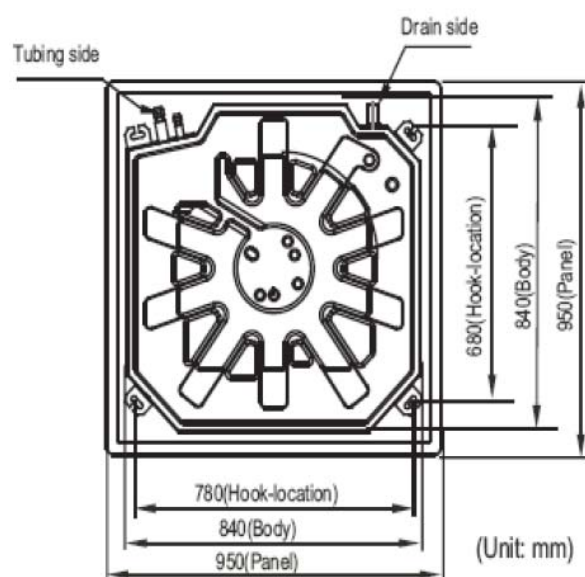


- (17) Optimal design, smaller Control Box, Space saving and convenient for wiring, Using fire resistance galvanized steel for E-box material. Metal box make the control part more stable and prevent damaging.

- (18) 360° air flow panel : 360° air flow delivery ensures uniform airflow distribution(optional)



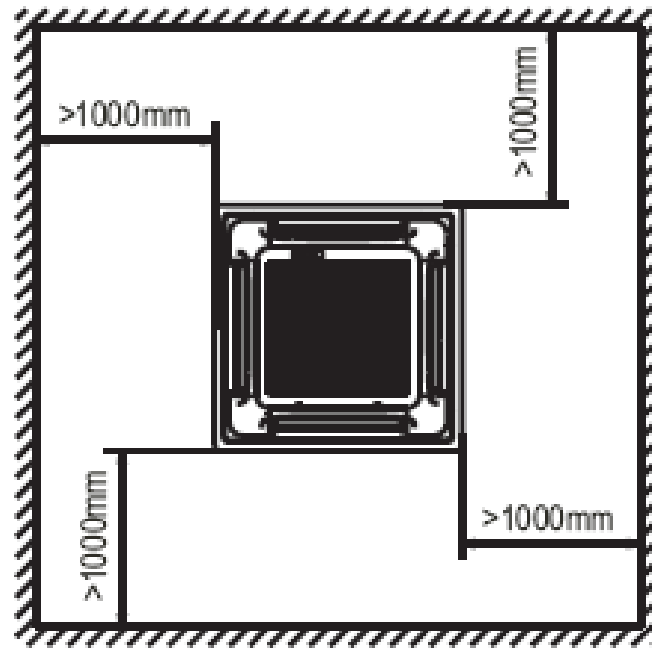
2. Dimensions



Unit: mm

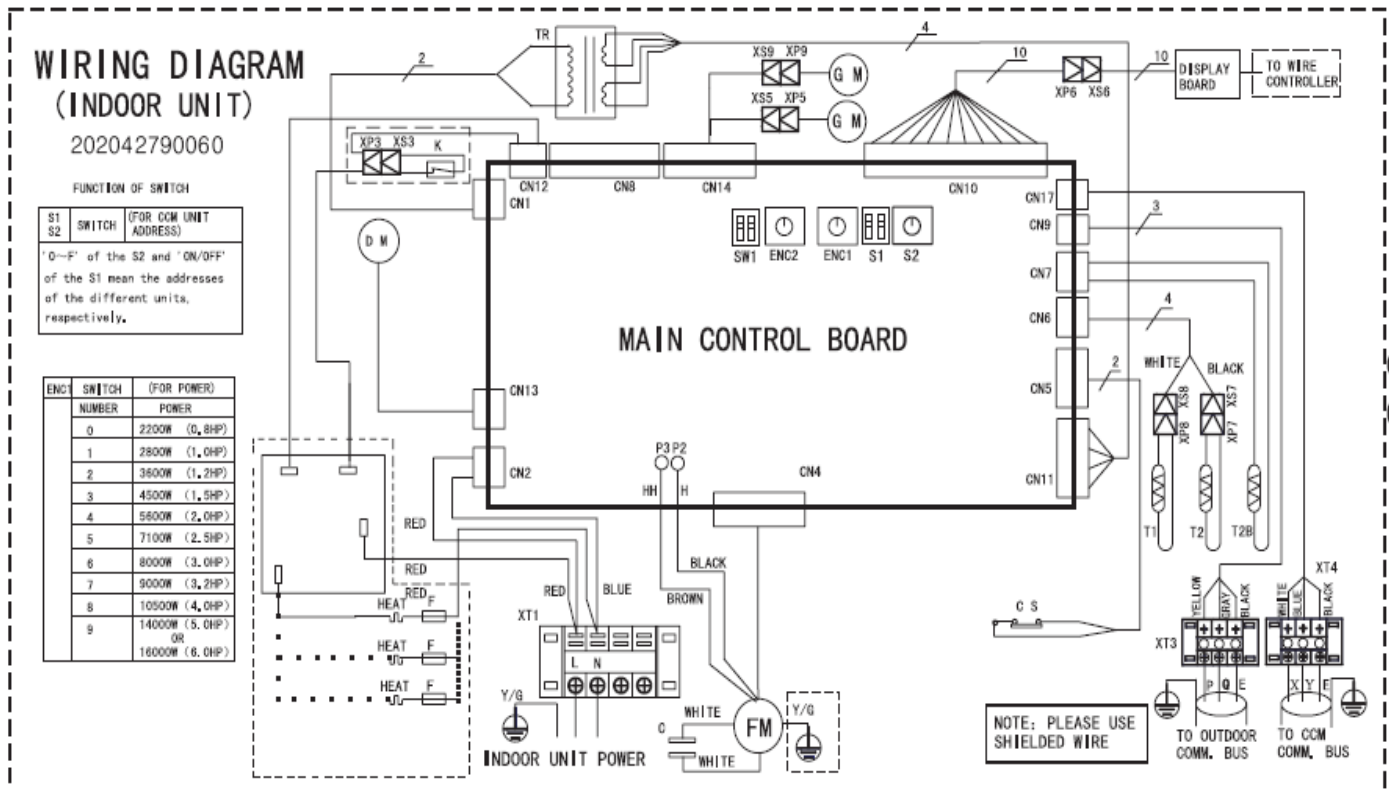
MODEL(Btu/h)	A	B	C	H
36000	300	$\phi 15.9$	$\phi 9.5$	>330
48000	300	$\phi 15.9$	$\phi 9.5$	>330

3. Service Space



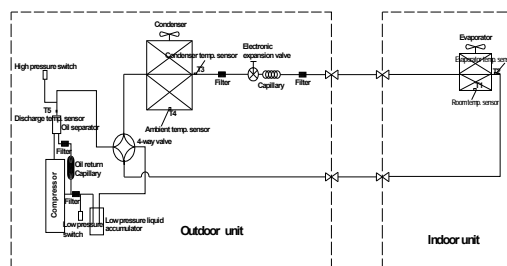
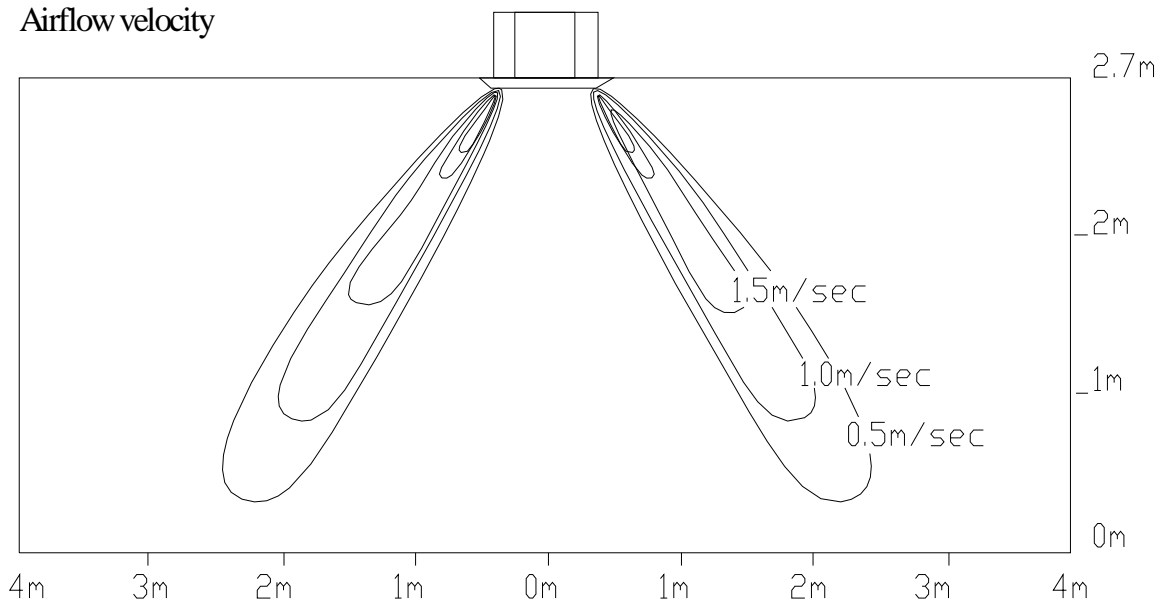
4. Wiring Diagrams

MCC-36HRDN1、MCC-48HRDN1



5. Air Velocity and Temperature Distributions

Airflow velocity



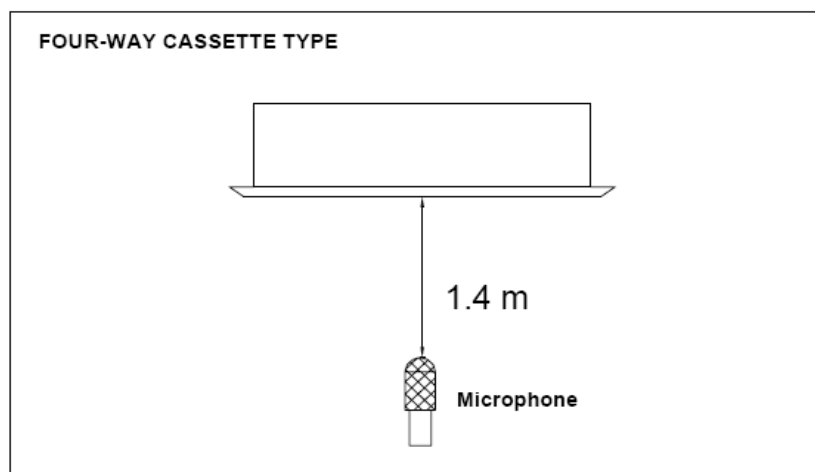
6. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
MCC-36HRDN1	50	220-240	198	254	15
MCC-48HRDN1	50	220-240	198	254	15

Remark:











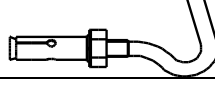
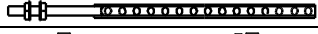
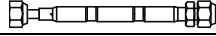
MFA: Max. Fuse Amps. (A)

7. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MCC-36HRDN1	44	42	41
MCC-48HRDN1	44	42	41

8. Accessories

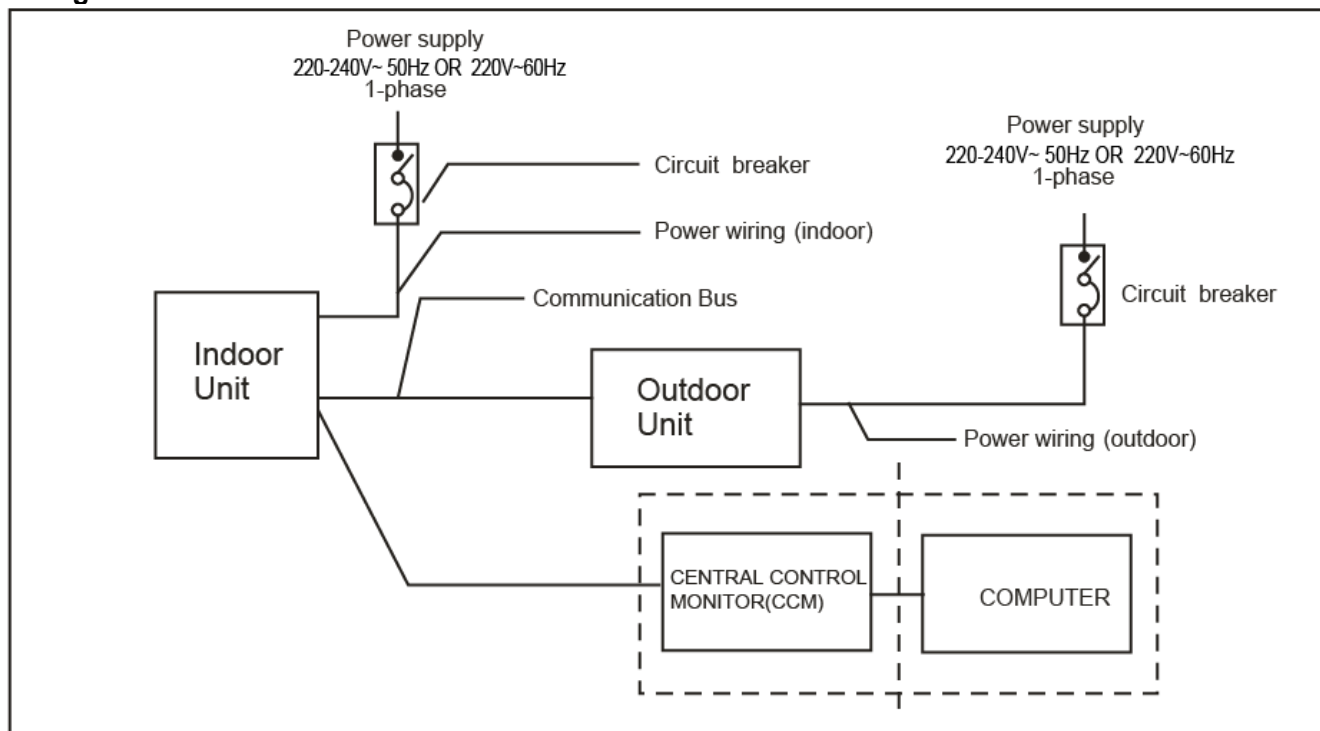
INSTALLATION FITTINGS	Name	Shape	Quantity
	Installation paper board		1
Tubing & Fittings	Soundproof / insulation sheath		2
	Connecting pipe group		1
Drainpipe Fittings	Out-let pipe sheath		1
	Out-let pipe clasp		1
	Drain joint		1
	Seal ring		1
Remote controller & Its Frame	Remote controller & Its Frame		1
	Remote controller holder		1
	Mounting screw(ST2.9×10-C-H)		2
	Alkaline dry batteries (AM4)		2
Others	Owner's manual		1
	Installation manual		1
Installation accessory (The product you have might not be provided the following accessories	Expansable hook		4
	Installation hook		4
	Orifice		1

9. The Specification of Power

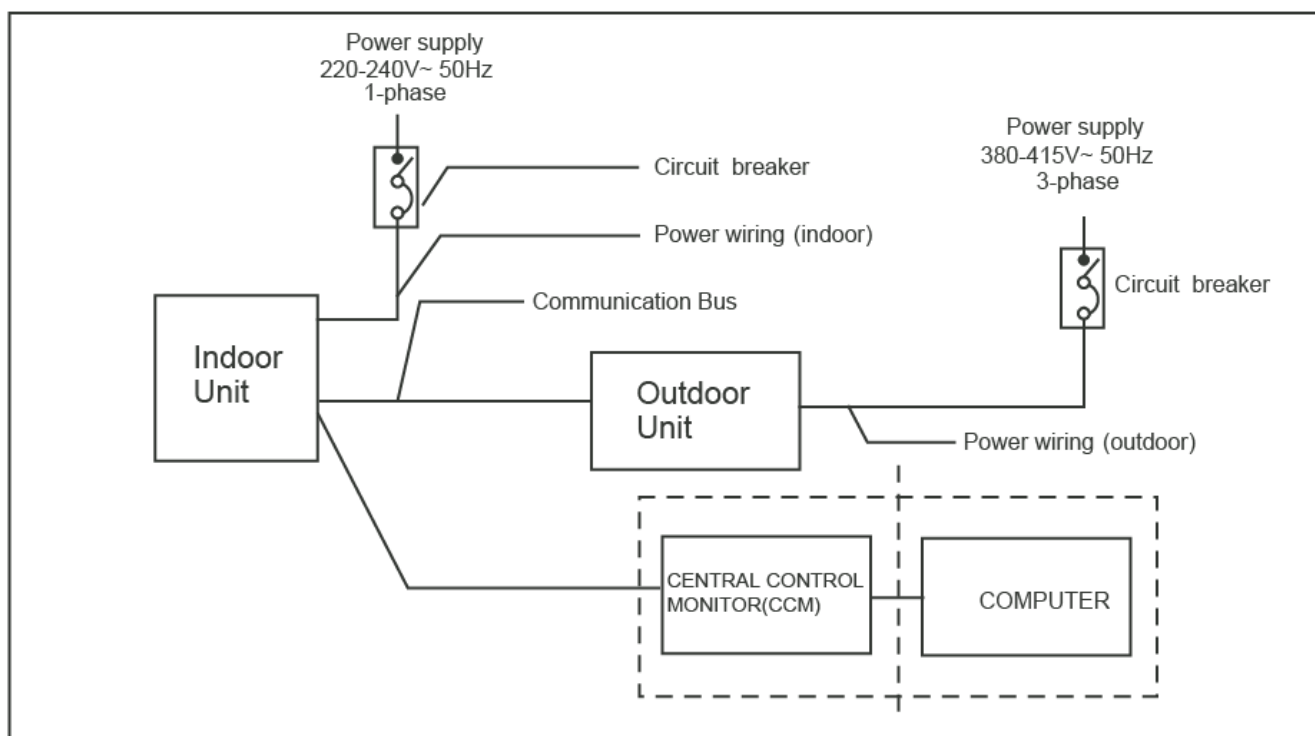
MODEL		18-24 (with 1-PHASE OUTDOOR UNIT)	30-48 (with 1-PHASE OUTDOOR UNIT)	36-60 (with 3-PHASE OUTDOOR UNIT)
INDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz
	POWER WIRING (mm ²)	3X1.0	3X1.0	3X1.0
	CIRCUIT BREAKER (A)	15	15	15
OUTDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	3-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz / 220V~ 60Hz	380-415V~ 50Hz
	POWER WIRING (mm ²)	3X2.5	3X2.5	5X2.5
	CIRCUIT BREAKER (A)	30	40	30
INDOOR/OUTDOOR CONNECTION WIRING (WEAK ELECTRIC SIGNAL) (mm ²)		3X0.5	3X0.5	3X0.5
INDOOR/OUTDOOR CONNECTION WIRING (STRONG ELECTRIC SIGNAL) (mm ²)		—	—	—

10. Field Wiring

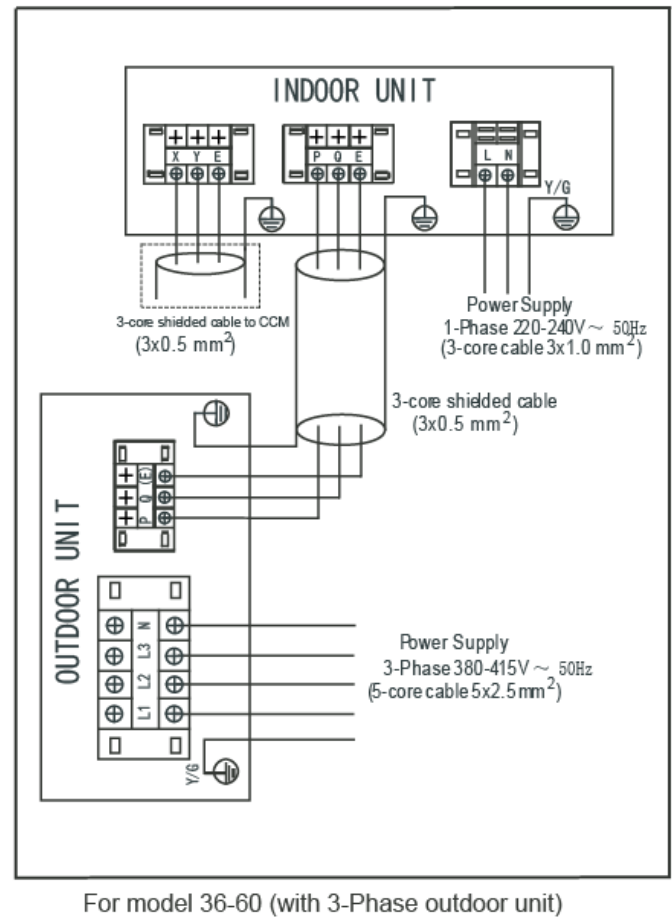
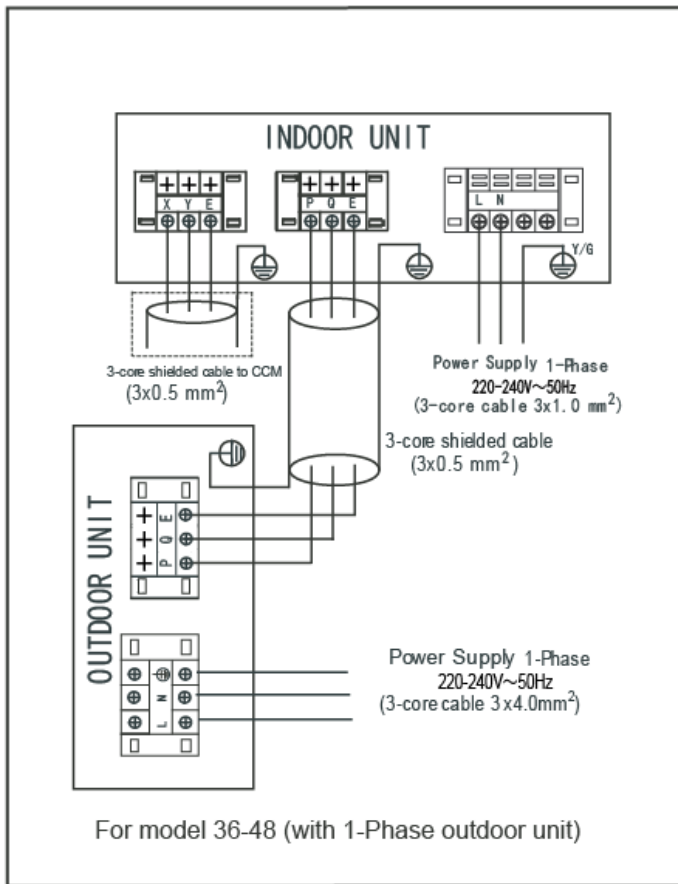
Wiring chart



For model 18-48 (with 1-Phase outdoor unit)



For model 36-60 (with 3-Phase outdoor unit)



Duct Type

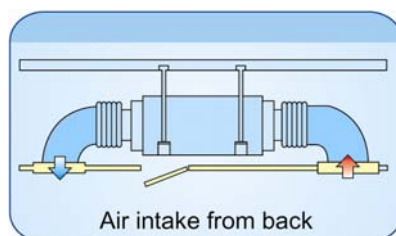
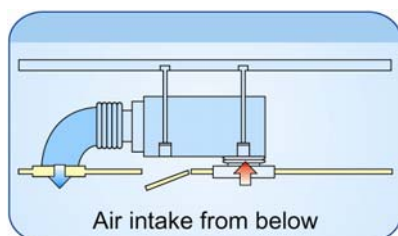
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1. Features

- New structure design.



- Built-in drainage pump (Optical).
- Two air intake ways: from below or rear (standard).

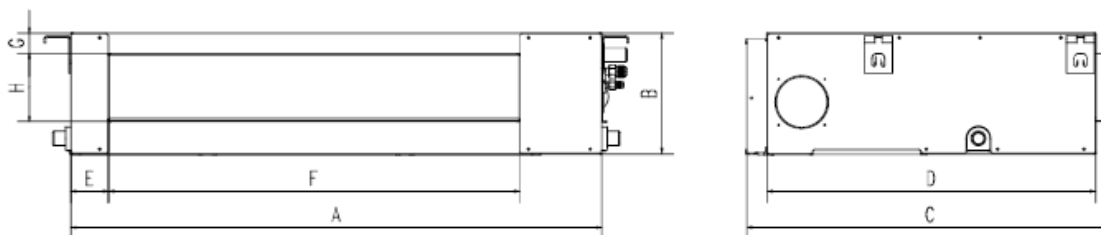


- Wire controller is standard.
- Three speeds indoor unit.
- Fresh air inlet hole is reserved.

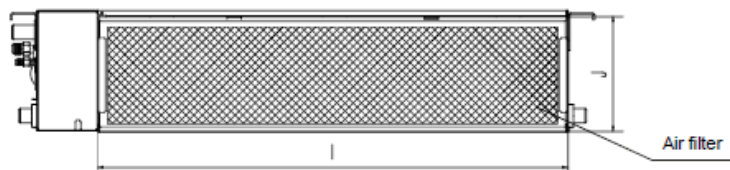
2. Dimensions

Outline dimension and air outlet opening size

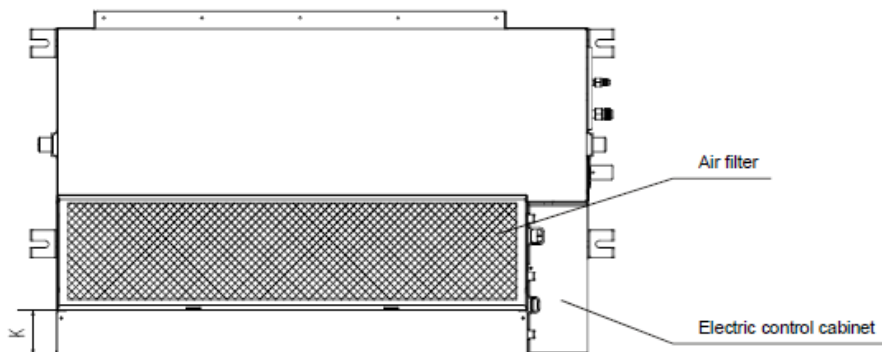
Unit: mm



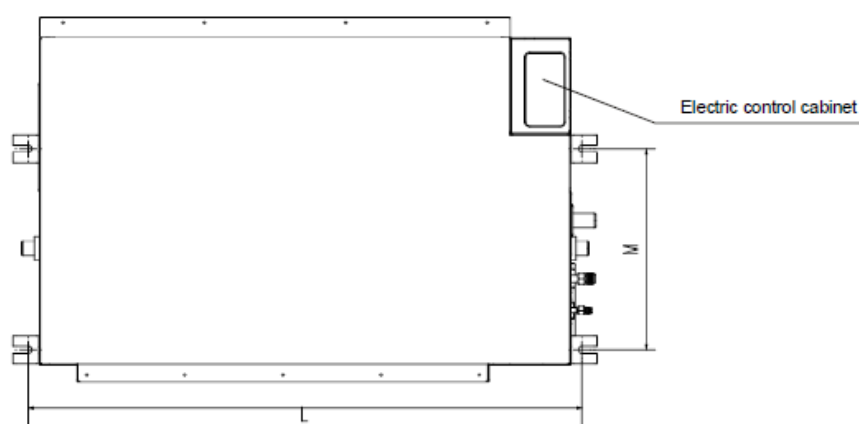
Air return opening size



Position size of descensional ventilation opening



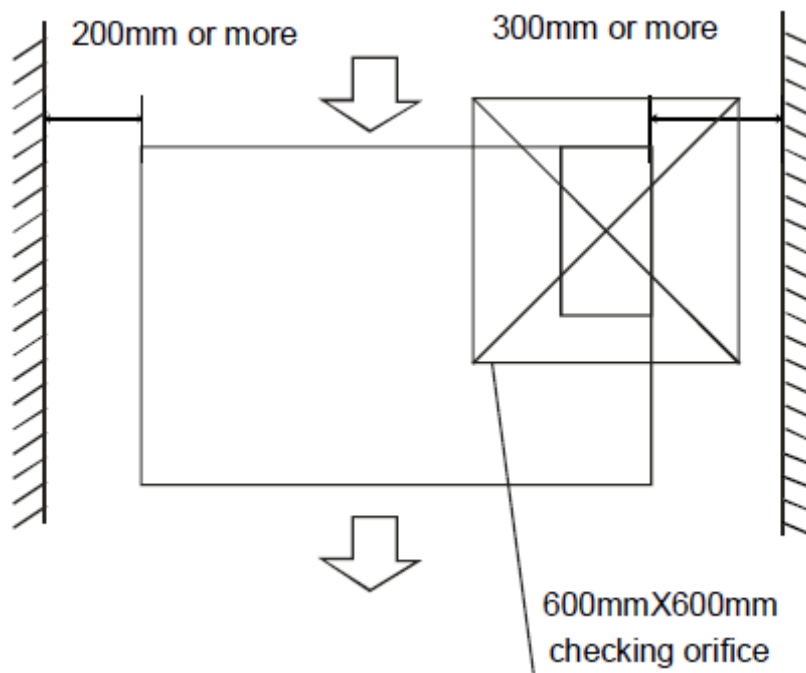
Size of mounted lug



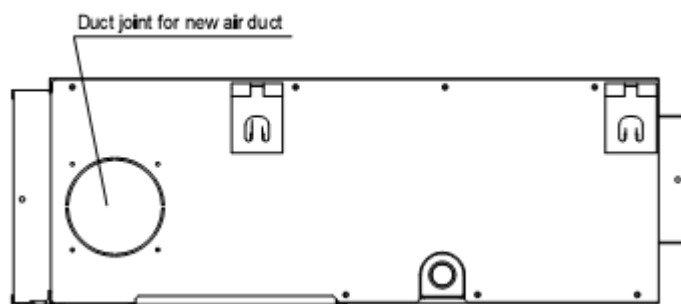
Capacity (KBtu)	Outline dimension(mm)				Air outlet o pening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
MTB-36HWDN1	1140	270	775	710	65	933	35	179	1035	260	20	1180	490
MTB-48HWDN1	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

3. Service Space

Ensure enough space required for installation and maintenance.



All the indoor units reserve the hole to joint the fresh air pipe. The hole size as following:



MODLE	
12-24	30-60

4. Wiring Diagrams

MTB-36HWDN1

MTB-48HWDN1

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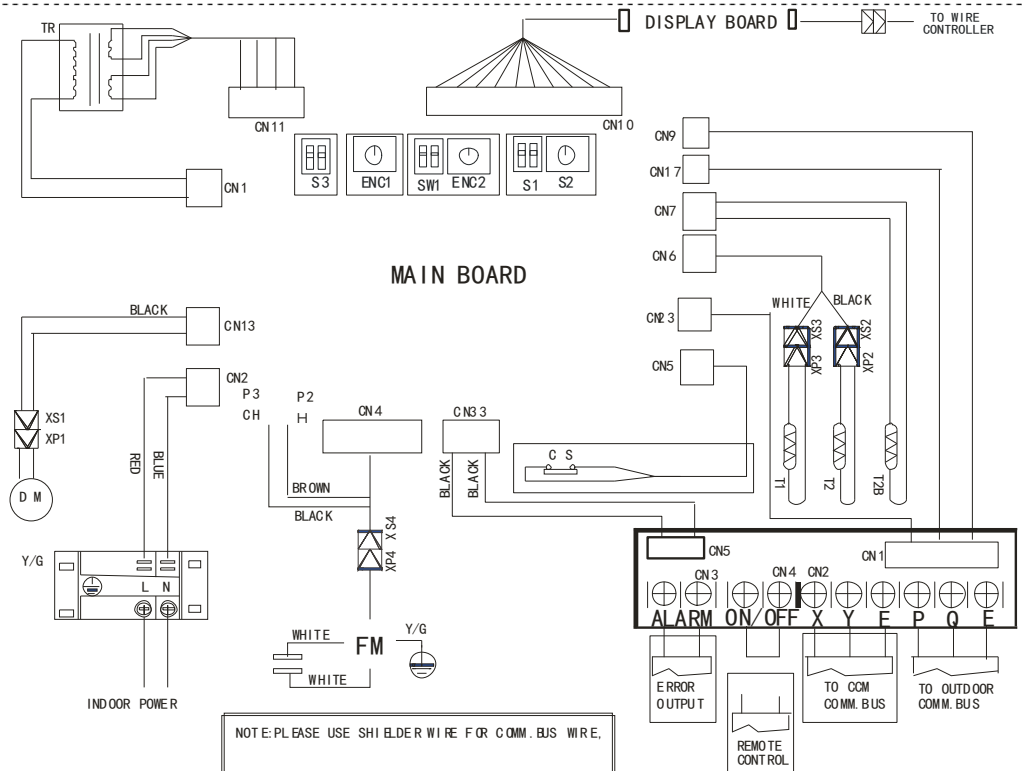
CODE	TITLE
FM	FAN MOTOR
DM	PUMP MOTOR
CS	WATER LEVEL SWITCH
H/P2	HIGH FAN
CH/P3	SUPER HIGH FAN
T1	ROOM TEMP.
T2B	OUTER PIPE TEMP.
T2	MIDDLE PIPE TEMP.
XP1-4	CONNECTORS
XS1-4	CONNECTORS
TR	TRANSFORMER

FUNCTION OF SWITCH

SW1 ENC2	SWITCH	(FOR INDOOR UNIT ADDRESS)
		'0~F' of the ENC2 and 'ON/OFF' of the SW1 mean the addresses of the different units, respectively.

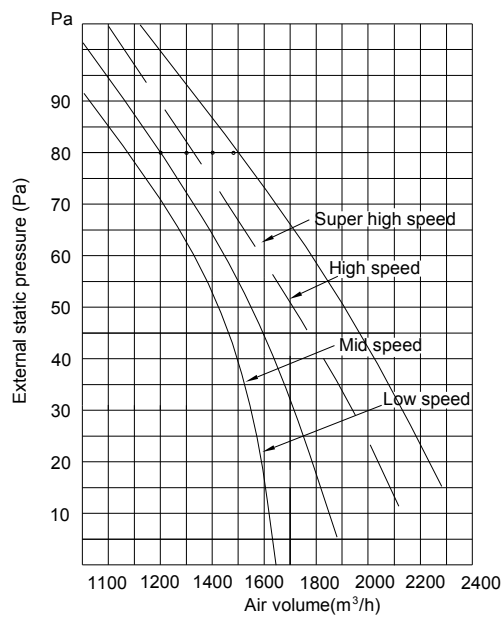
S1 S2	SWITCH	(FOR CCM UNIT ADDRESS)
		'0~F' of the S2 and 'ON/OFF' of the S1 mean the addresses of the different net units, respectively.

ENC1	SWITCH	(FOR POWER)
NUMBER	POWER	
4	5300W	
5	5600W	
7	7100W	
8	9000W	
9	10500W	
	14000W	
	16000W	

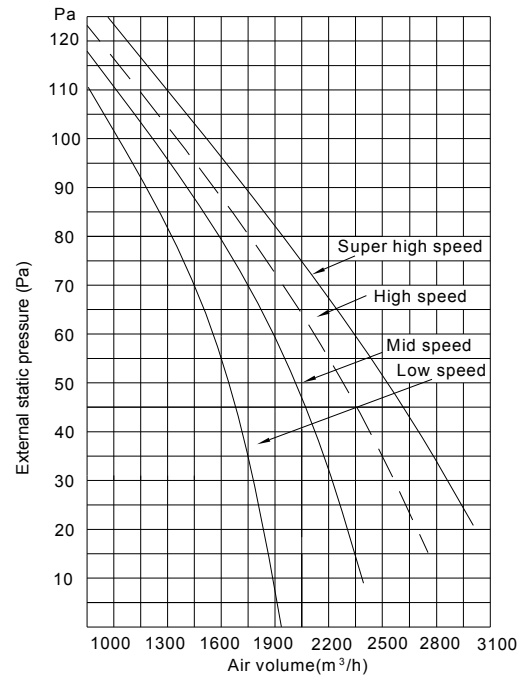


5. Static Pressure

MTB-36HWDN1



MTB-48HWDN1



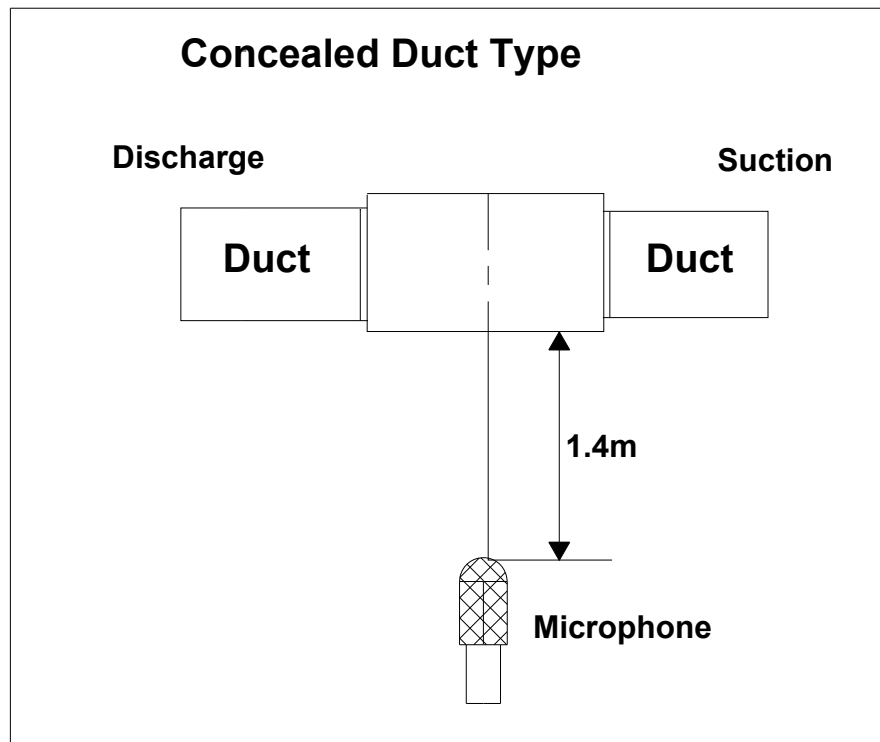
6. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MTB-36HWDN1	50	220-240	207	253	15
MTB-48HWDN1	50	220-240	207	253	15

Remark:














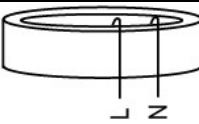
MFA: Max. Fuse Amps. (A)

7. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MTB-36HWDN1	46	44	42
MTB-48HWDN1	47	45	43

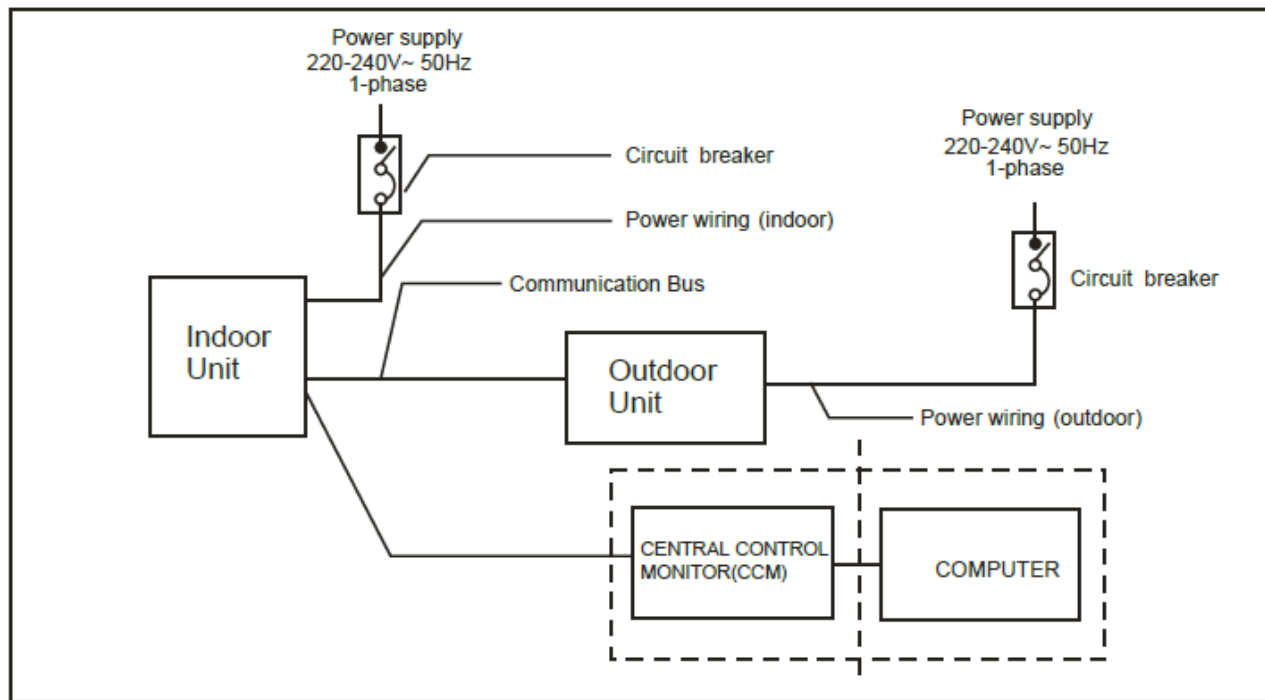
8. Accessories

	Name	Shape	Quantity
Tubing & Fittings	Soundproof / insulation sheath		2
	Binding tape		1
	Seal sponge		1
Drainpipe Fittings (for cooling & heating)	Drain joint		1
	Seal ring		1
Remote controller & Its Frame	Remote controller		1
	Frame		1
	Mounting screw(ST2.9 10-C-H)		2
	Alkaline dry batteries (AM4)		2
	Remote controller manual		1
Wired controller & Its Frame	Wired controller		1
Others	Owner' s manual		1
	Installation manual		1
EMS & It's fitting	Magnetic ring (twist the electric wires L and N around it to five circles)		1

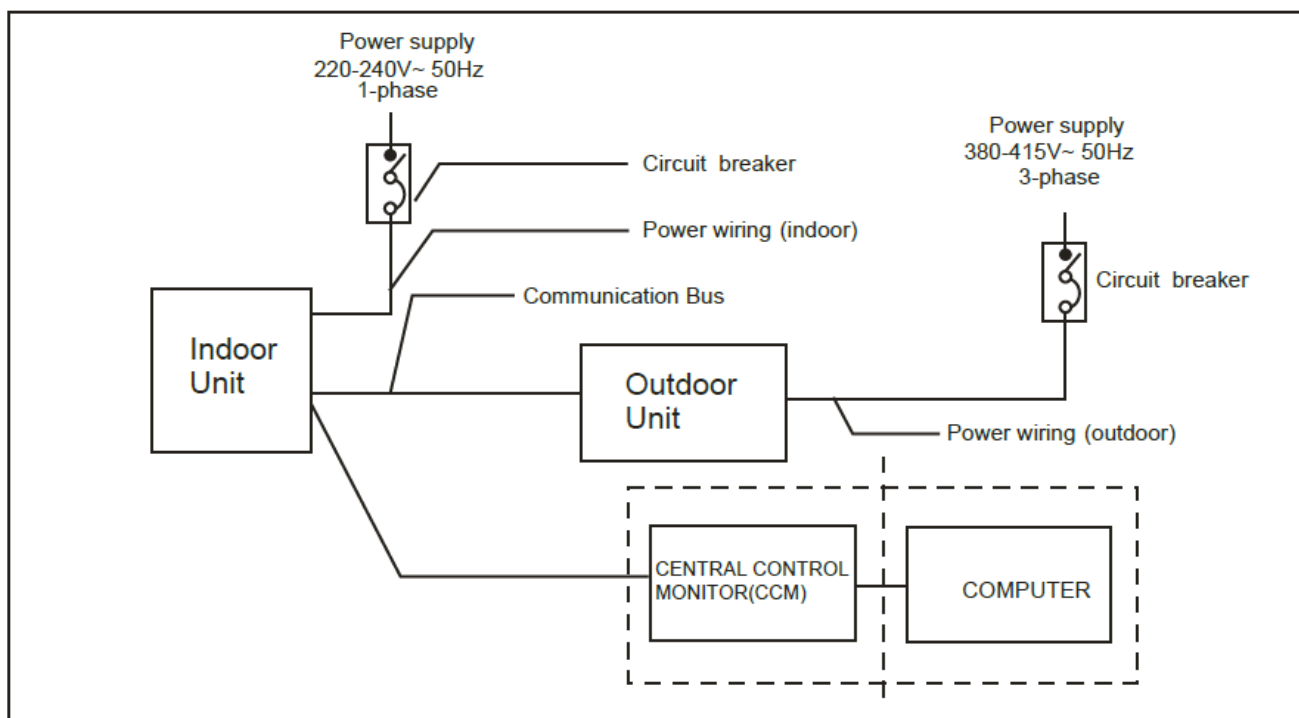
9. The Specification of Power

MODEL		12 (with 1 Phase Outdoor Unit)	18-24 (with 1 Phase Outdoor Unit)	30-36 (with 1 Phase Outdoor Unit)	36-60 (with 3 Phase Outdoor Unit)
INDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~, 50Hz	220-240V~, 50Hz	220-240V~, 50Hz	220-240V~, 50Hz
	POWER WIRING (mm ²)	3x1.5	3x1.0	3x1.0	3x1.0
	CIRCUIT BREAKER(A)	15	15	15	15
OUTDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE	3-PHASE
	FREQUENCY AND VOLT	220-240V~, 50HZ	220-240V~, 50HZ	220-240V~, 50HZ	380-415~, 50HZ
	POWER WIRING (mm ²)	—————	3x2.5	3x4.0	5x2.5
	CIRCUIT BREAKER(A)	—————	30	40	40
INDOOR/OUTDOOR CONNECTING WIRING (mm ²)		4x1.5	3-core shielded wire 3x0.5	3-core shielded wire 3x0.5	3-core shielded wire 3x0.5

10. Field Wiring

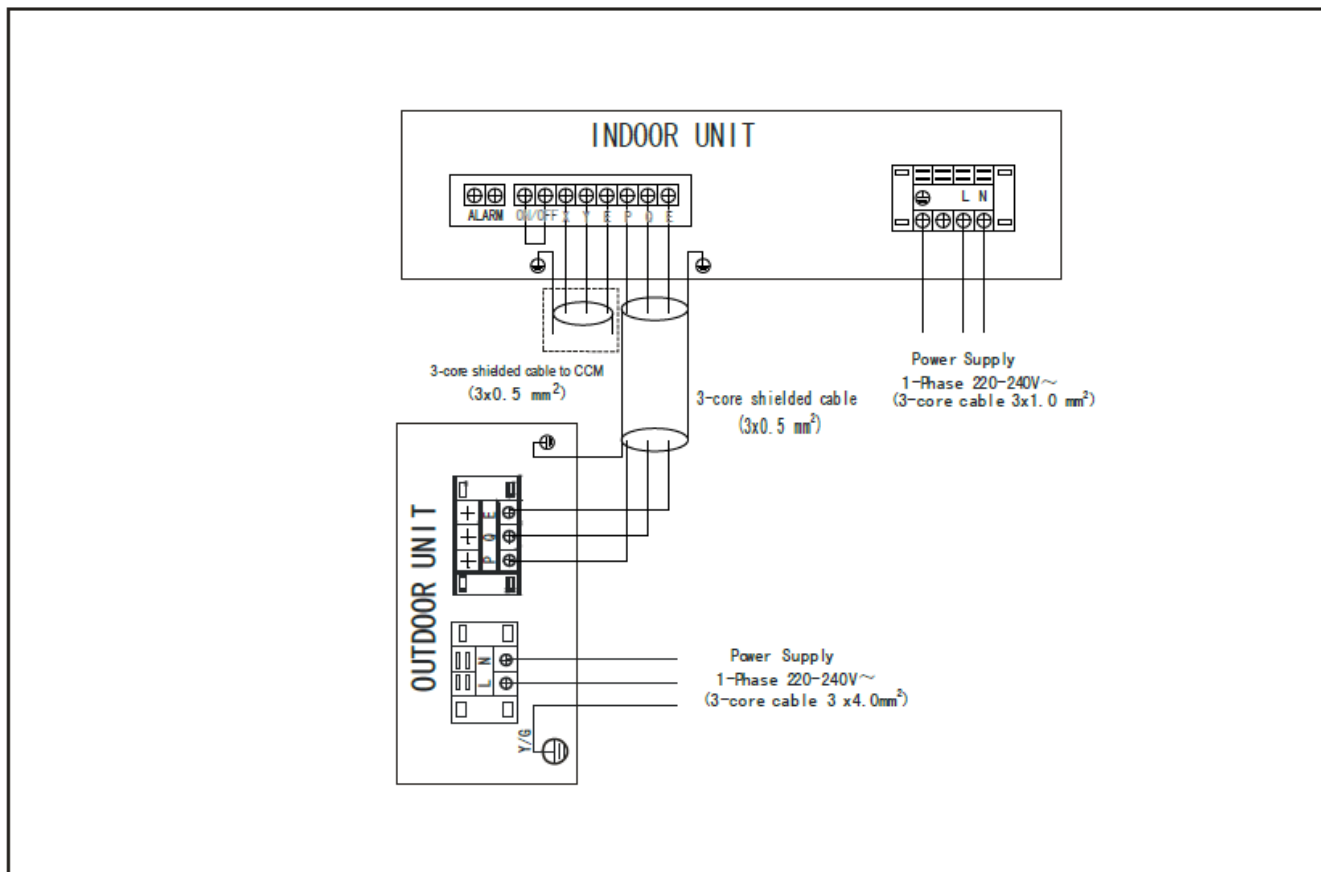


For Model 18-60 (with 1-Phase outdoor unit)

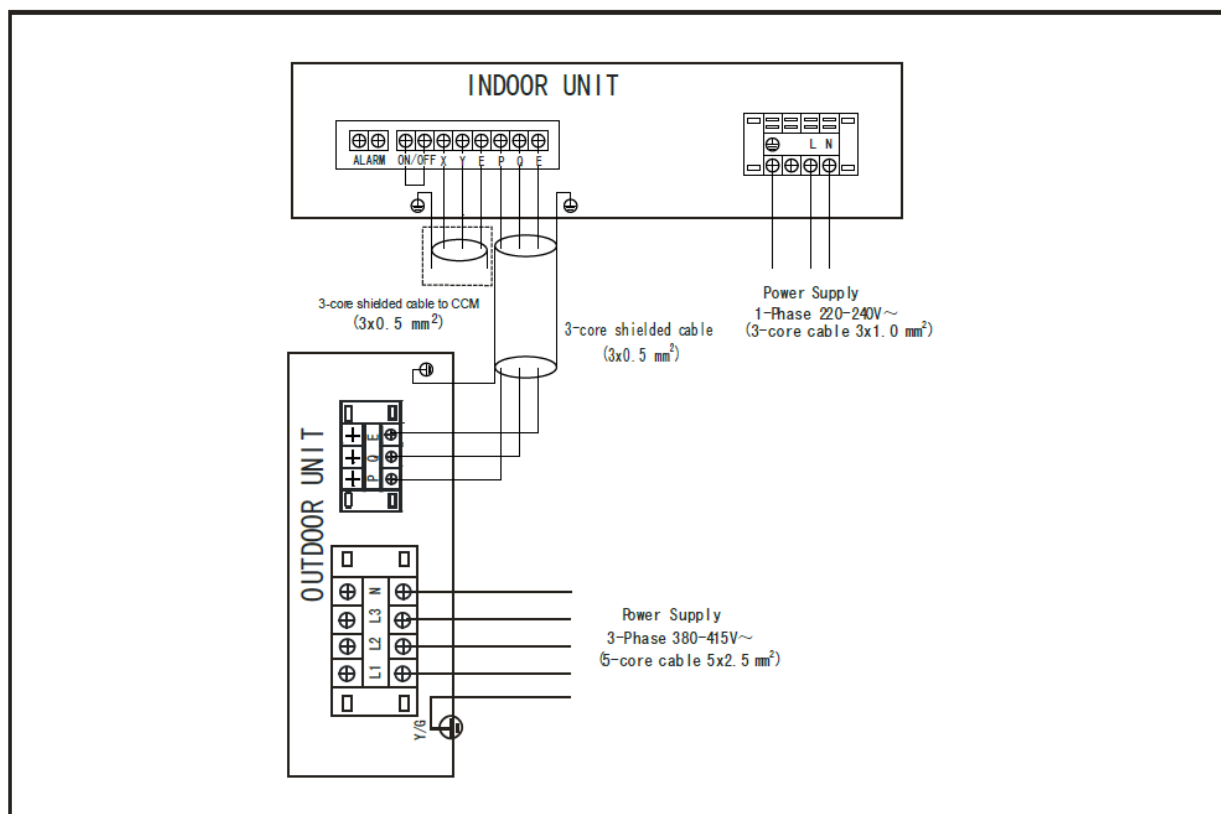


For Model 36-60 (with 3-Phase outdoor unit)

Air-conditioner link-circuit.



For Model 30-60(with 1-Phase outdoor unit)



For Model 36-60 (with 3-Phase outdoor unit)

Ceiling & Floor Type

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1. Features

1.1. New design, more modern and elegant appearance.

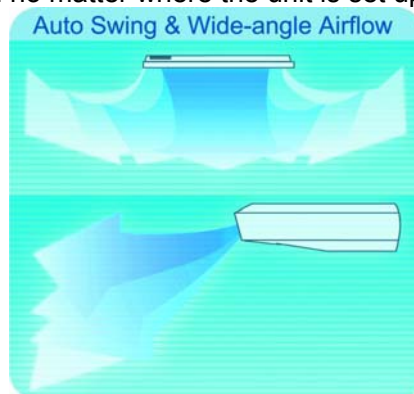


1.2. Convenient installation

- The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow
- It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting.

1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow,

- Air flow directional control minimizes the air resistance and produces wider air flow to vertical direction.
- The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



1.4. Three level fan speed, more humanism design, meets different air-supply requirement.

1.5. Water proof by utilizing the absorbing plastic film on water collector

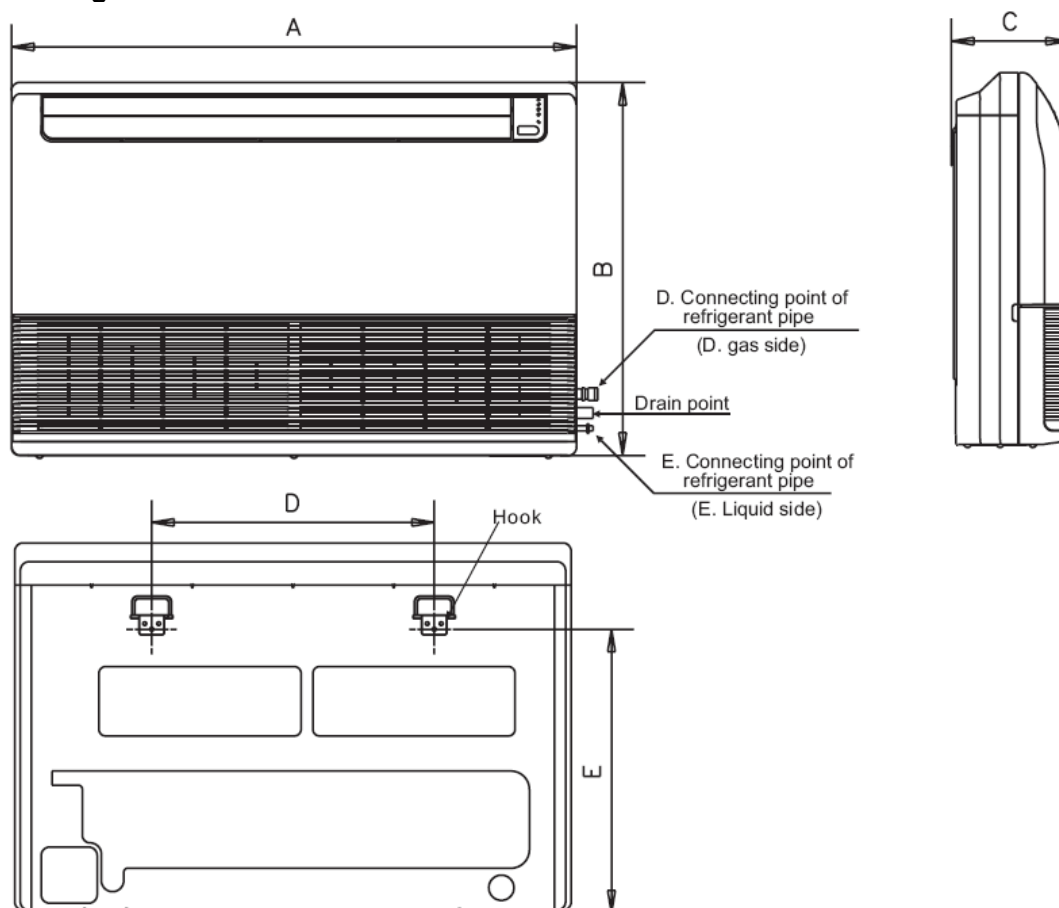
1.6. Easy operation. Auto-restart function, remote control and optional wire control method.

1.7. Low noise level plus compact size

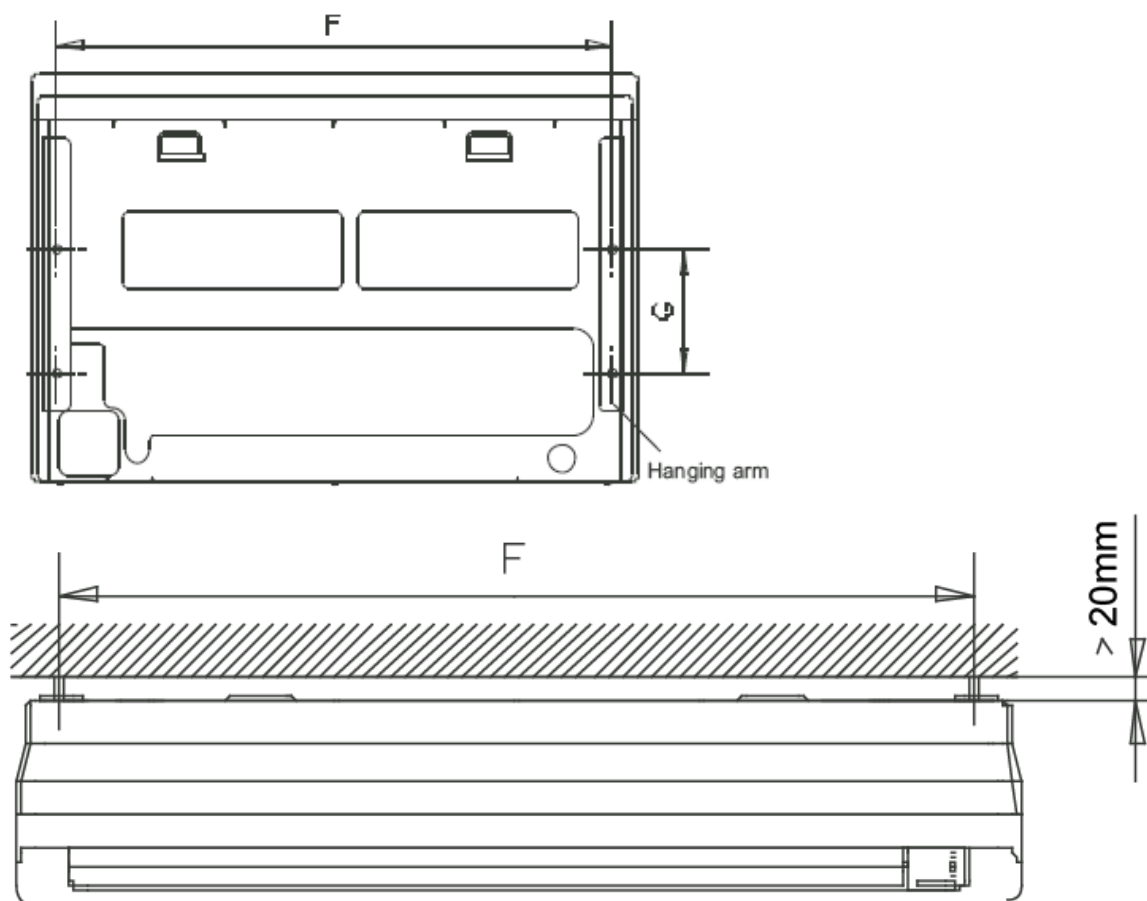
- Shape of the blades has been improved to prevent noise caused by turbulence.

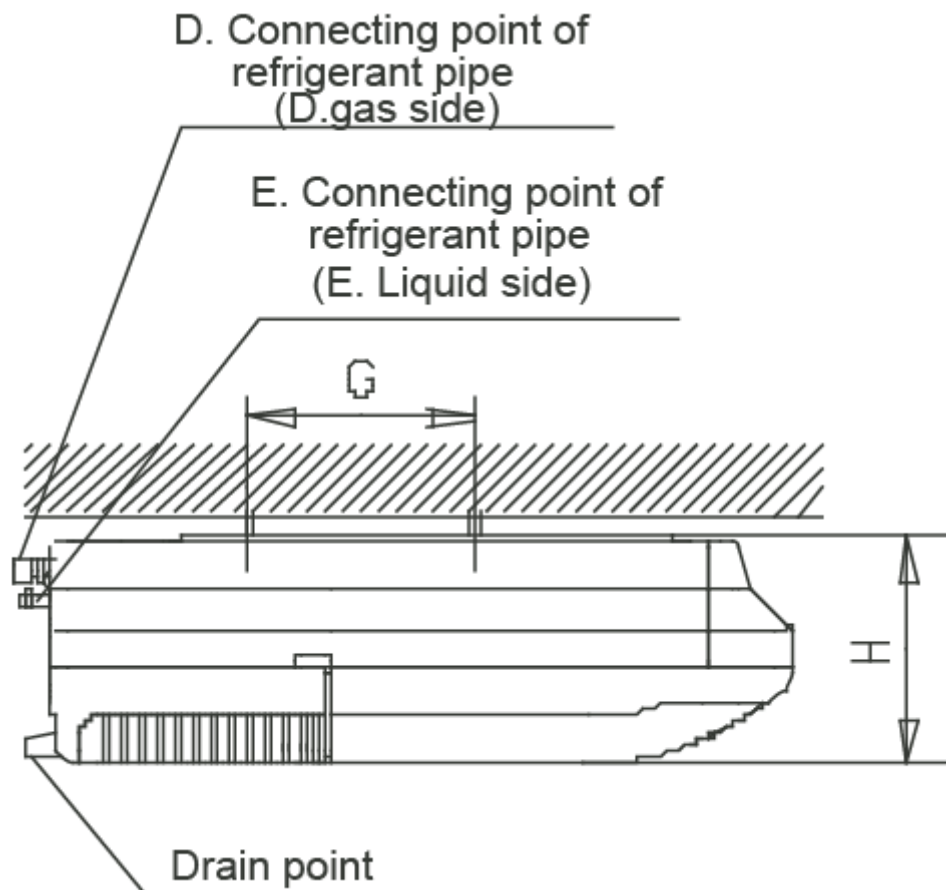
2. Dimensions

a. Wall mounting installation



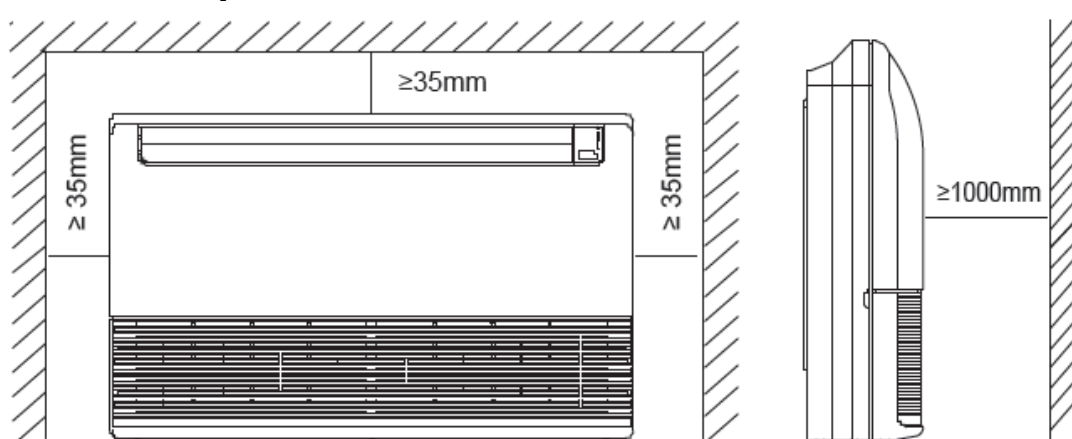
b. Ceiling installation





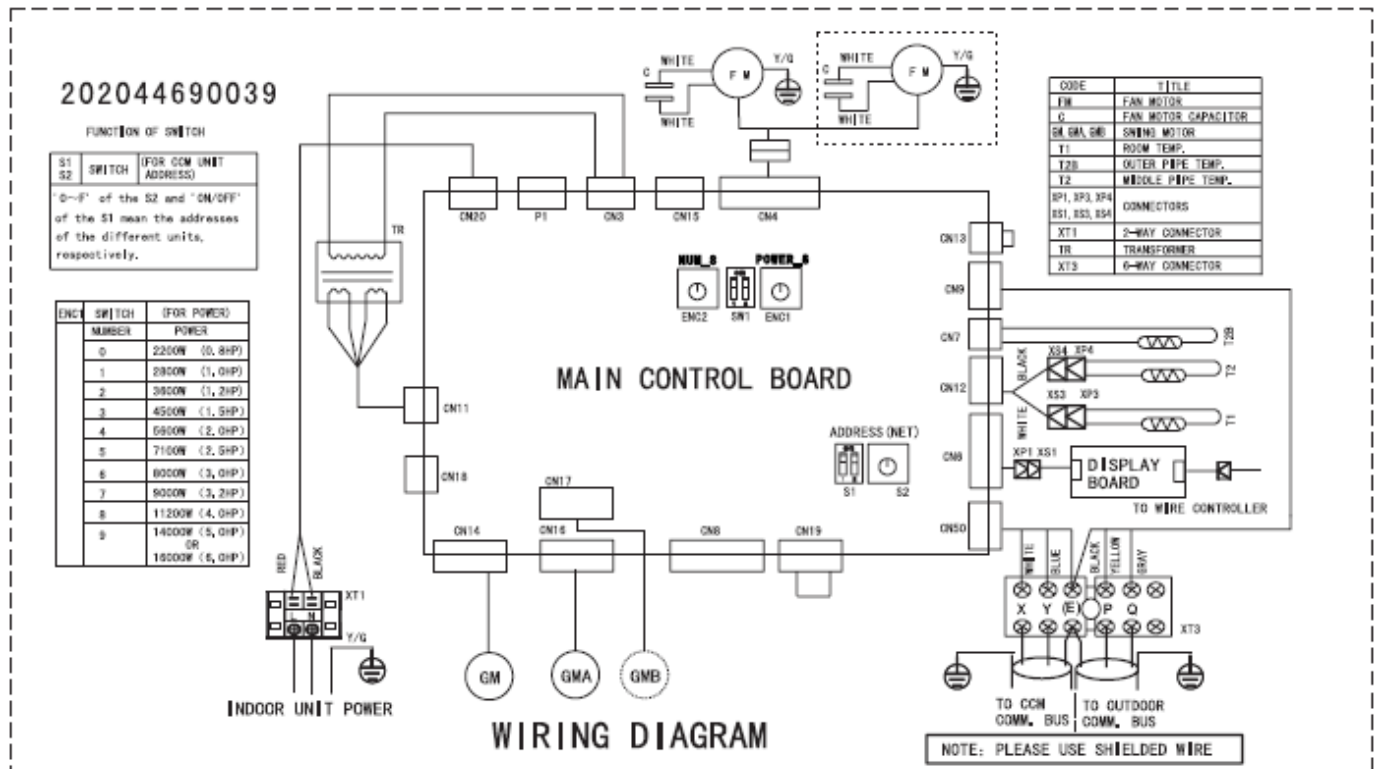
Capacity(Btu/h)	A	B	C	D	E	F	G	H
MUB-36HRDN1	1280	660	206	795	506	1195	200	203
MUB-48HRDN1	1670	680	244	1070	450	1542	200	240

3. Service Space



4. Wiring Diagrams

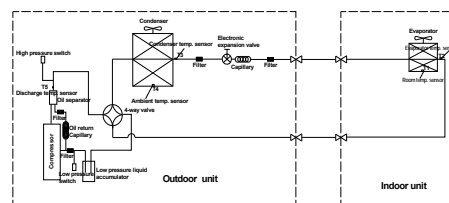
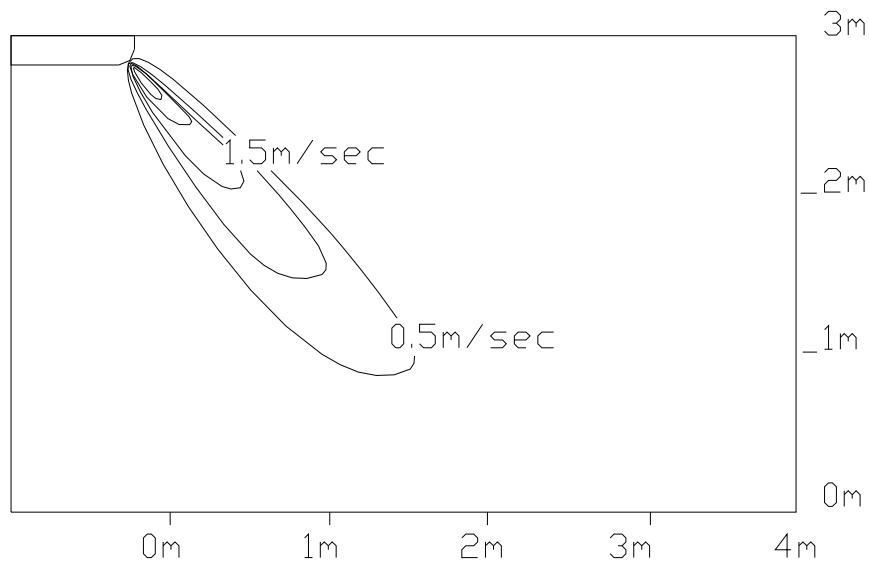
MUB-36HRDN1、MUB-48HRDN1



5. Air Velocity and Temperature Distributions

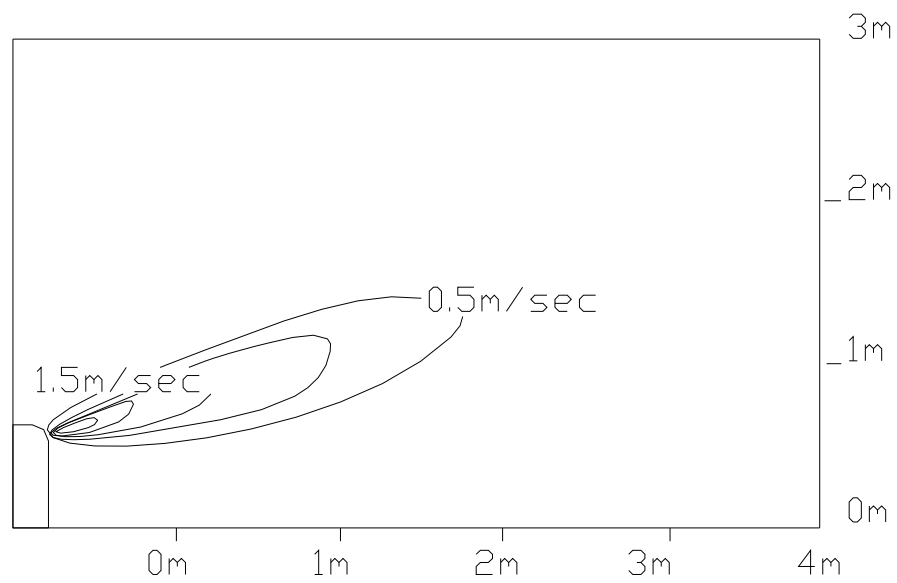
Discharge angle 60° (CEILING)

Airflow velocity

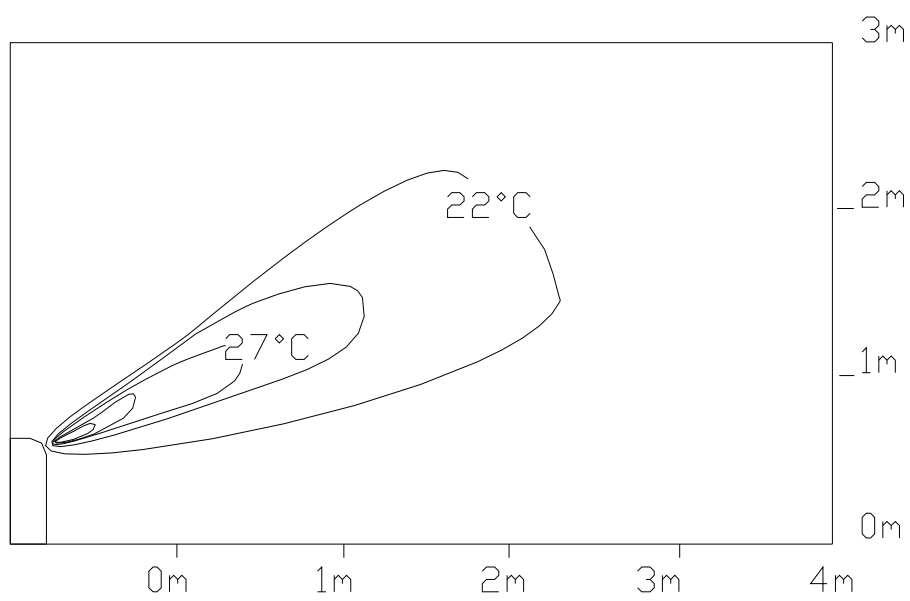


Discharge angle 60° (FLOOR)

Airflow velocity



Temperature



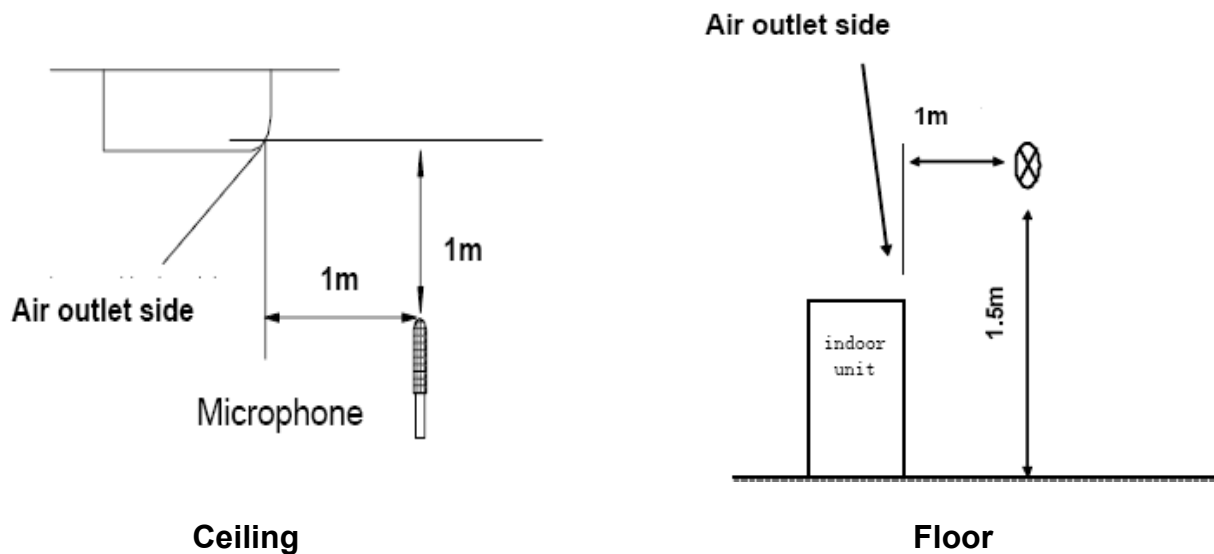
6. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
MUB-36HRDN1	50	220~240	198	254	15
MUB-48HRDN1	50	220~240	198	254	15

Remark:



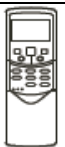





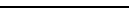
MFA: Max. Fuse Amps. (A)

7. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MUB-36HRDN1	45	43	40
MUB-48HRDN1	47	46	44

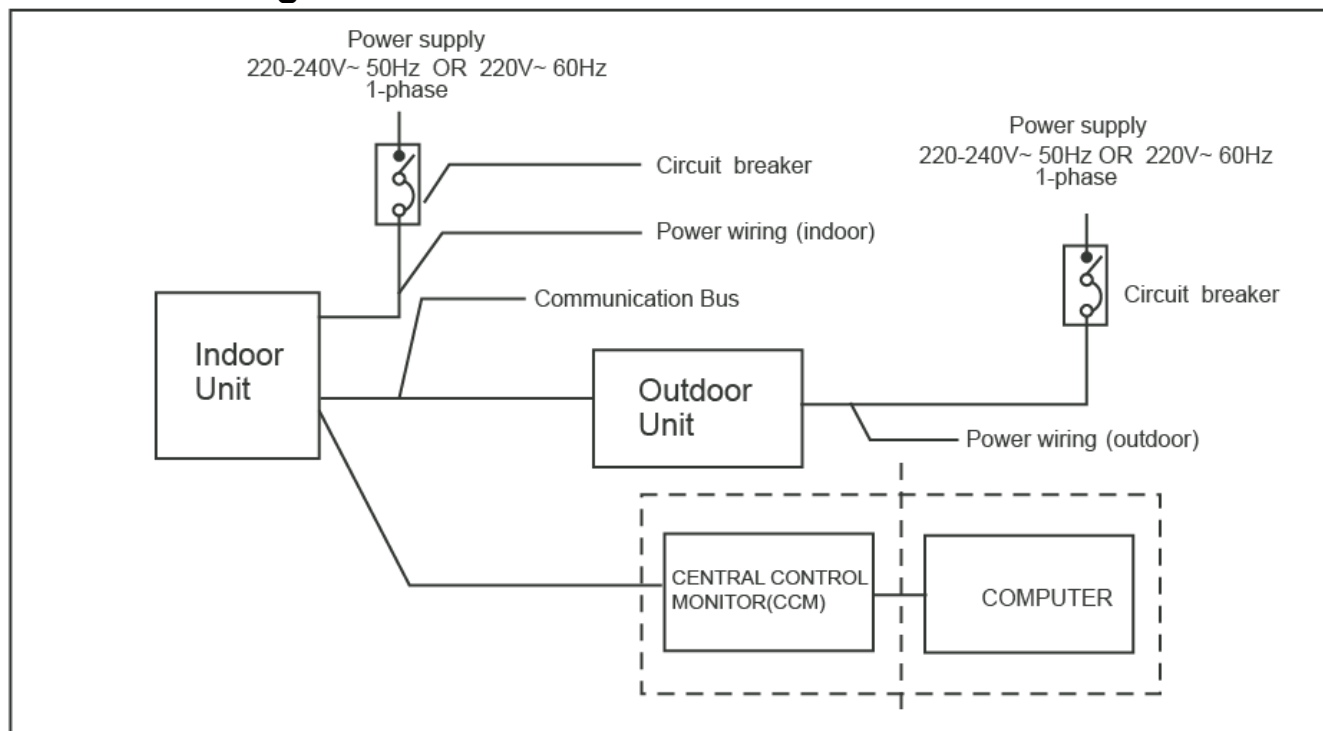
8. Accessories

	Name	Shape	Quantity
Installation fittings	1.Hook		2
	2.Hanging arm		2
Remote controller & Its holder	3. Remote controller		1
	4. Remote controller holder		1
	5. Mounting screw (ST2.9×10-C-H)		2
	6. Alkaline dry batteries (AM4)		2
Others	7. Owner's manual		1
	8. Installation manual		1
	9. Remote controller manual		1

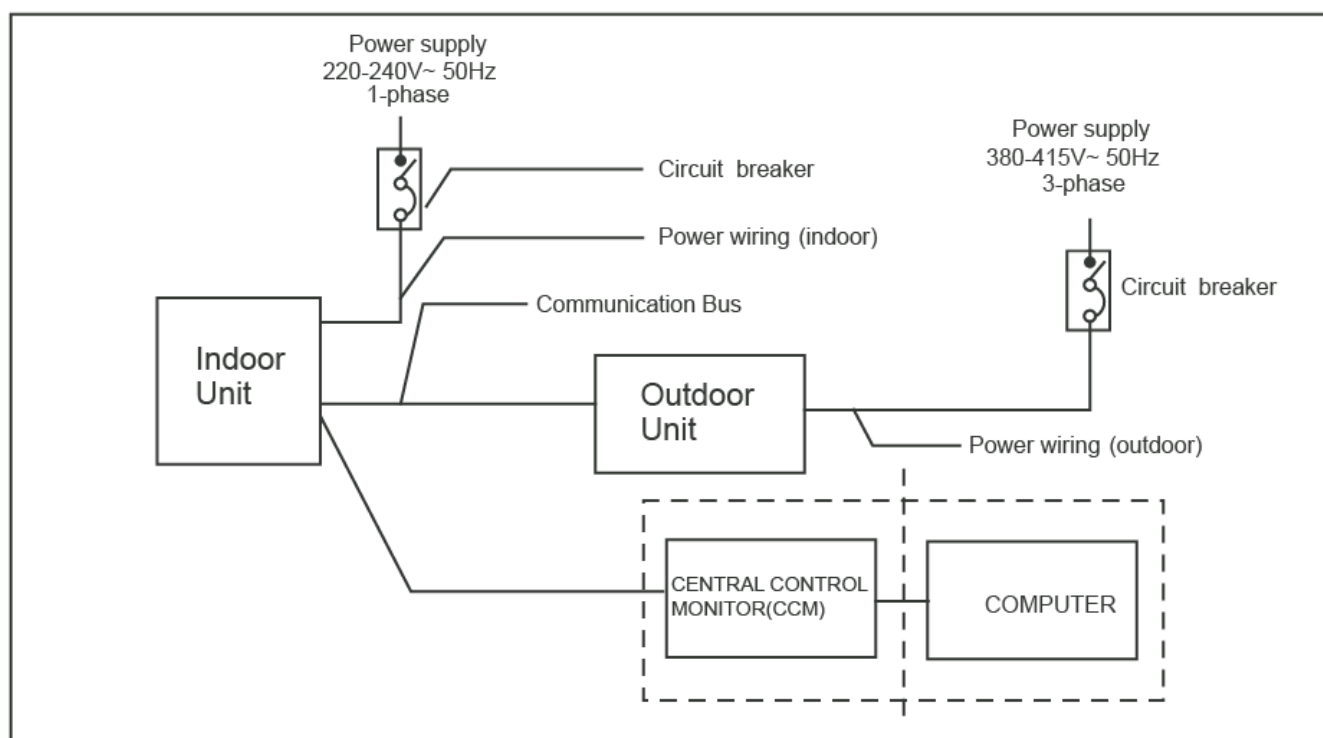
9. The Specification of Power

CAPICITY(Btu/h)		12000 (with 1-PHASE OUTDOOR UNIT)	18000-24000 (with 1-PHASE OUTDOOR UNIT)	30000-48000 (with 1-PHASE OUTDOOR UNIT)	36000-48000 (with 3-PHASE OUTDOOR UNIT)	24000-36000 (with 1-PHASE OUTDOOR UNIT)
INDOOR UNIT	PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz	220-240V~ 50Hz	220-240V~ 50Hz	220-240V~ 50Hz	220V~ 60Hz
	POWER WIRING (mm ²)	3X1.5	3X1.0	3X1.0	3X1.0	3X1.0
	CIRCUIT BREAKER (A)	20	15	15	15	15
OUTDOOR UNIT	PHASE	————	1-PHASE	1-PHASE	3-PHASE	1-PHASE
	FREQUENCY AND VOLT	————	220-240V~ 50Hz	220-240V~ 50Hz	380-415V~ 50Hz	220V~ 60Hz
	POWER WIRING (mm ²)	————	3X2.5	3X2.5	5X2.5	3X2.5
	CIRCUIT BREAKER (A)	————	30	40	30	40
INDOOR/OUTDOOR CONNECTION WIRING (mm ²)		4-CORE WIRE 4X1.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5

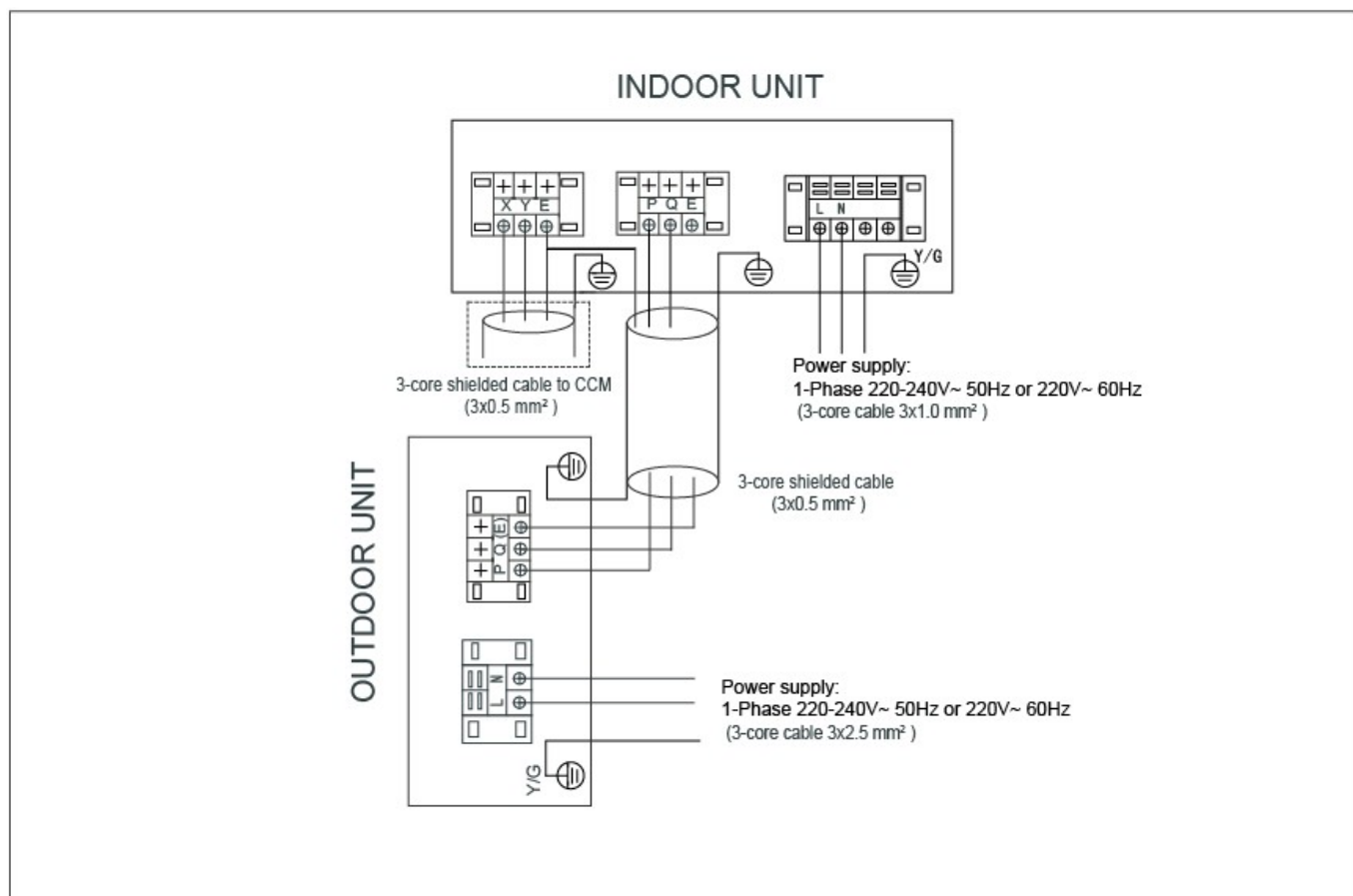
10. Field Wiring



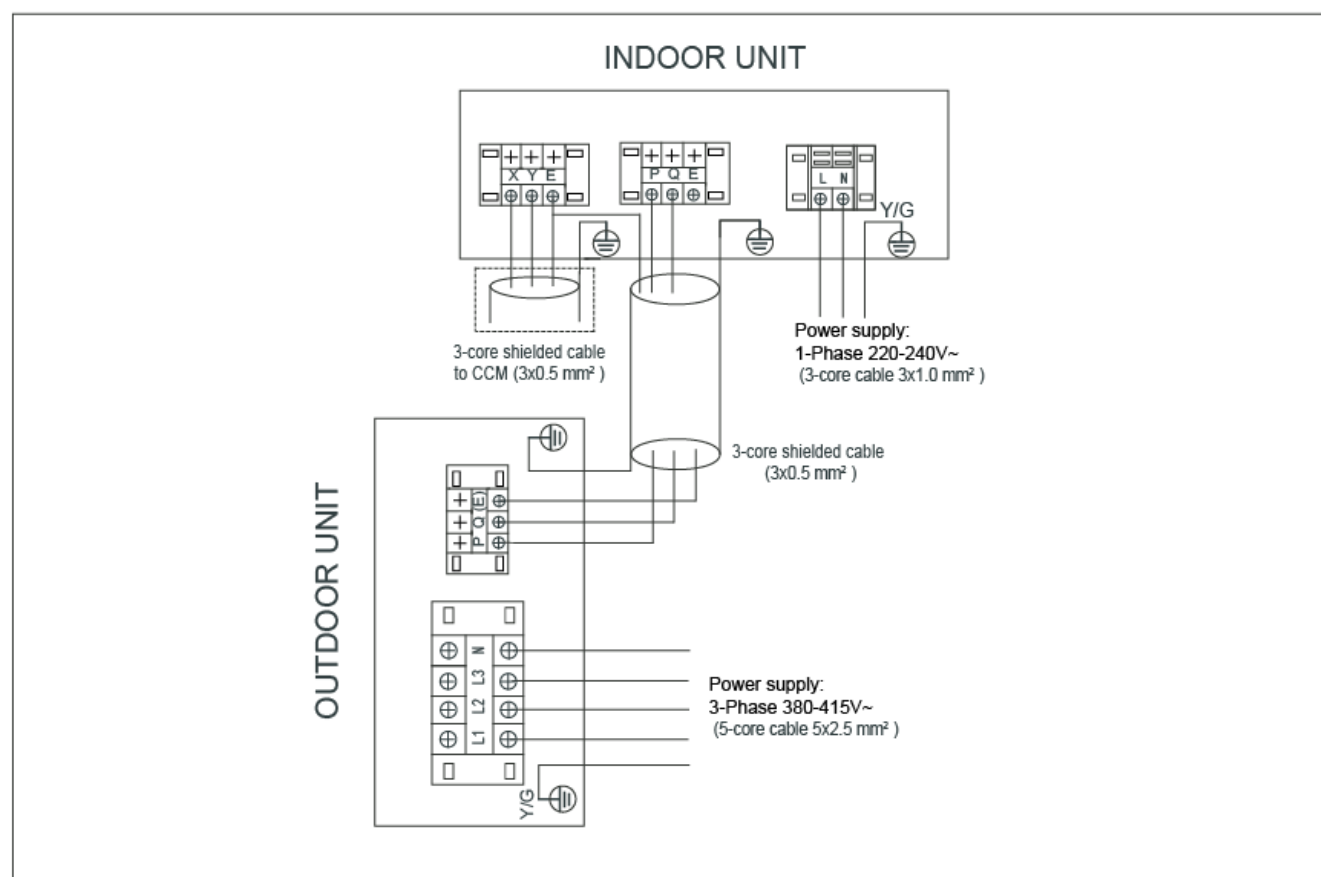
For 18000-60000Btu/h (with 1-Phase outdoor unit)



For 36000-60000Btu/h (with 3-Phase outdoor unit)



For 18000-60000Btu/h (with 1-Phase outdoor unit)



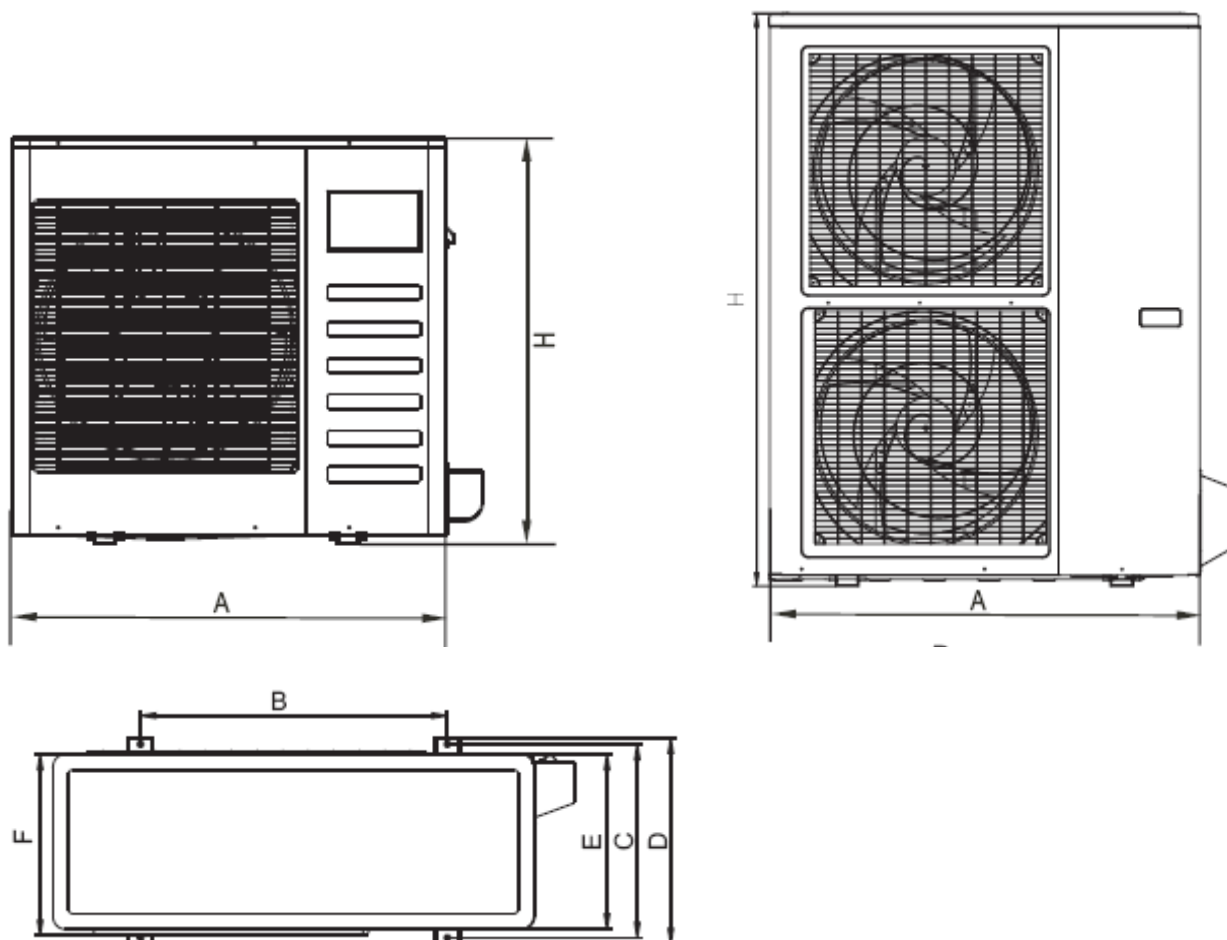
For 36000-60000Btu/h (with 3-Phase outdoor unit)

Part 3

Outdoor Units

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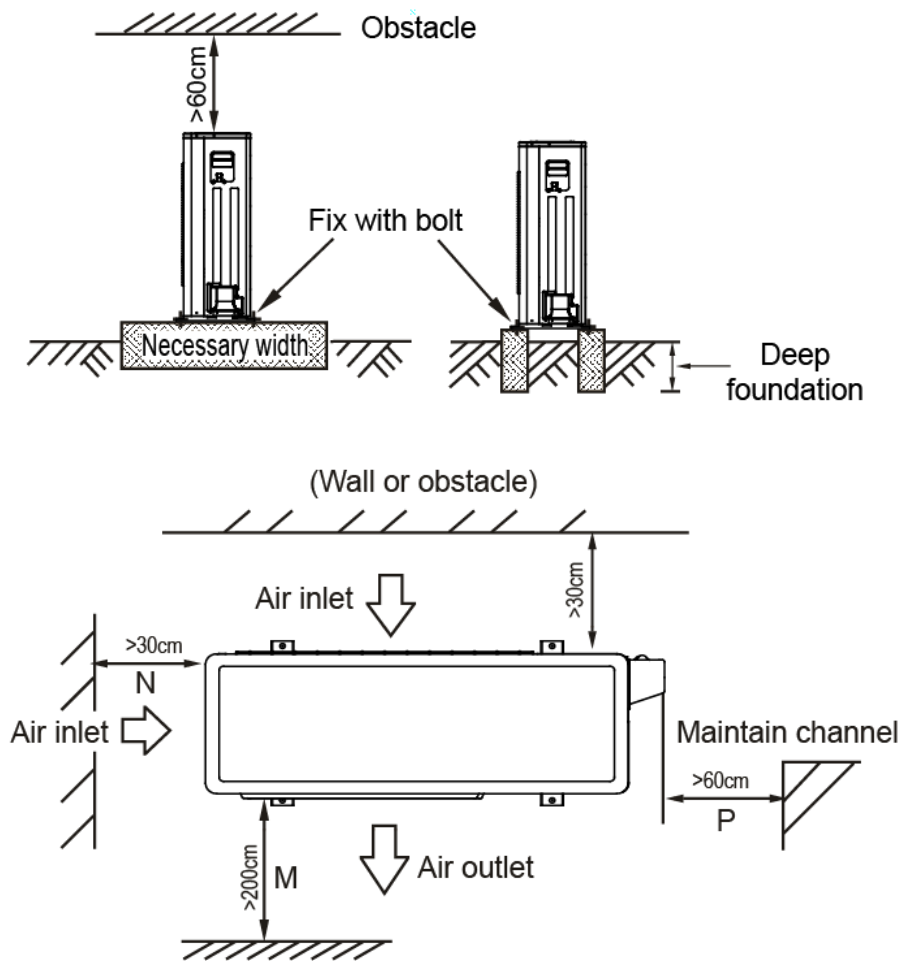
1. Dimensions



Unit: mm

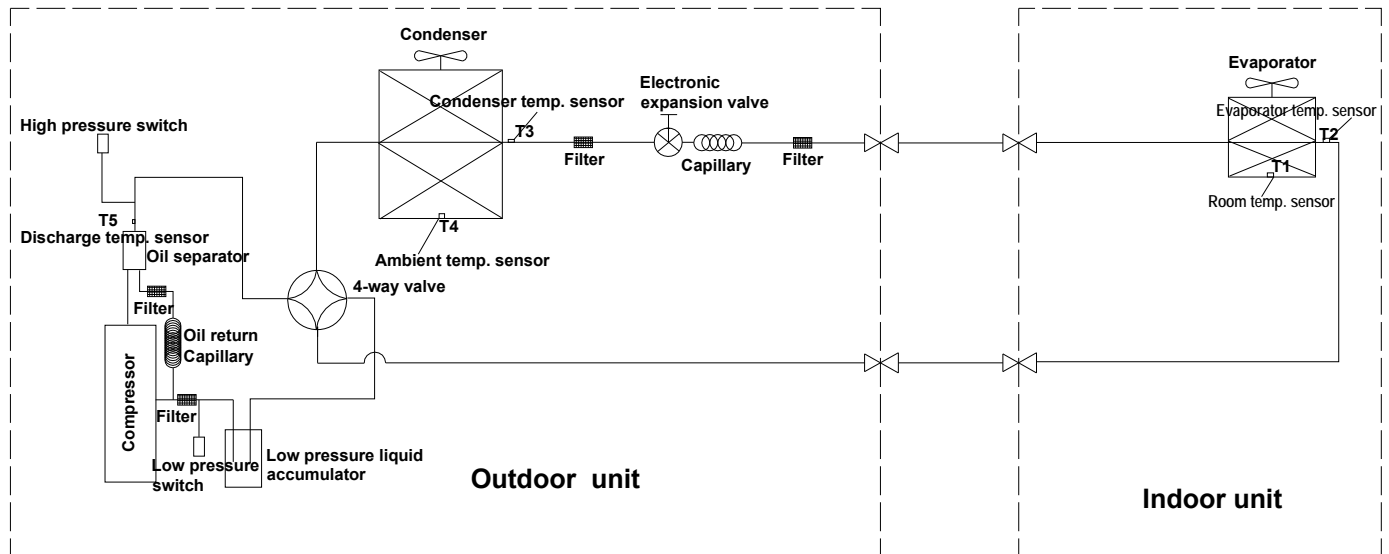
MODEL	A	B	C	D	E	F	H
MOUB-36HDN1-Q	940	600	376	400	340	360	1245
MOUB-36HDN1-R	990	624	366	396	340	354	966
MOU-48HDN1	940	600	376	400	340	360	1245
MOUB-48HDN1-R	940	600	376	400	340	360	1245

2. Service Space



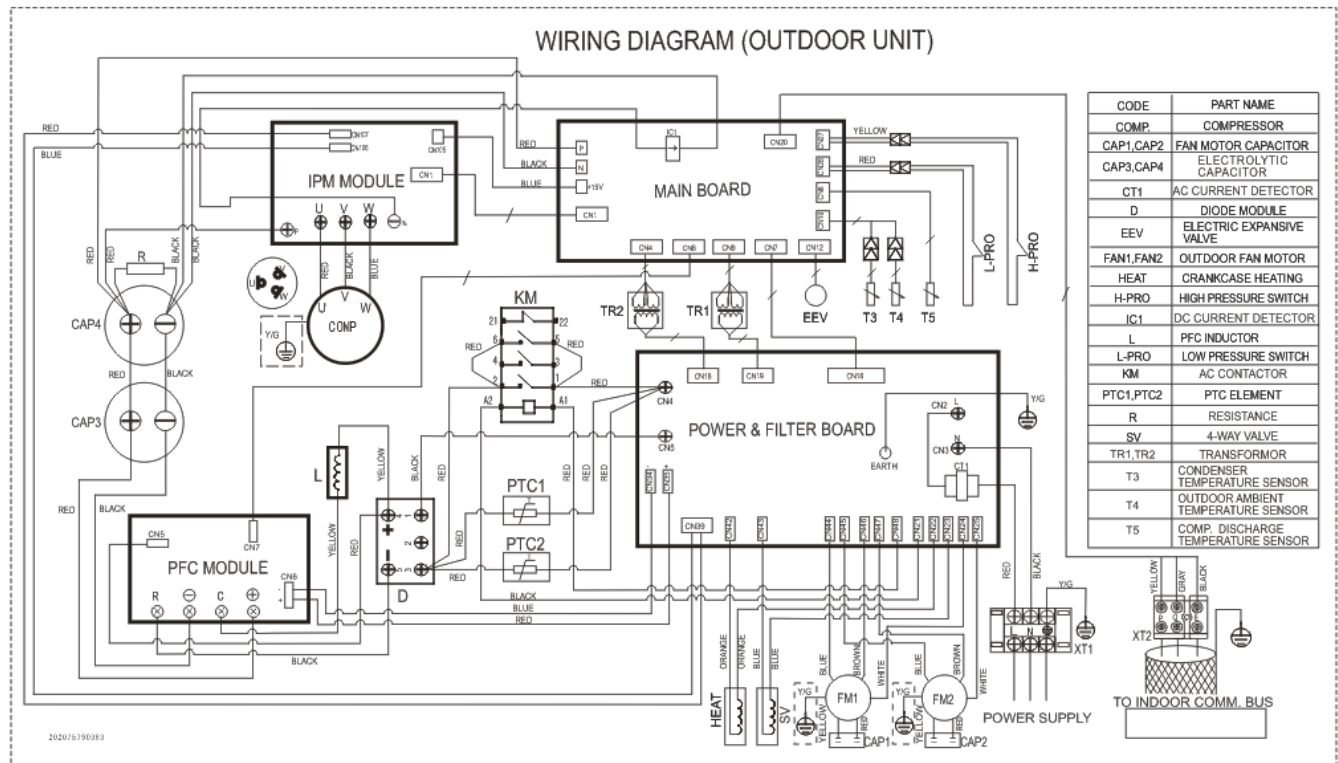
3. Piping Diagrams

MOUB-36HDN1-Q、MOU-48HDN1、MOUB-36HDN1-R、MOUB-48HDN1-R

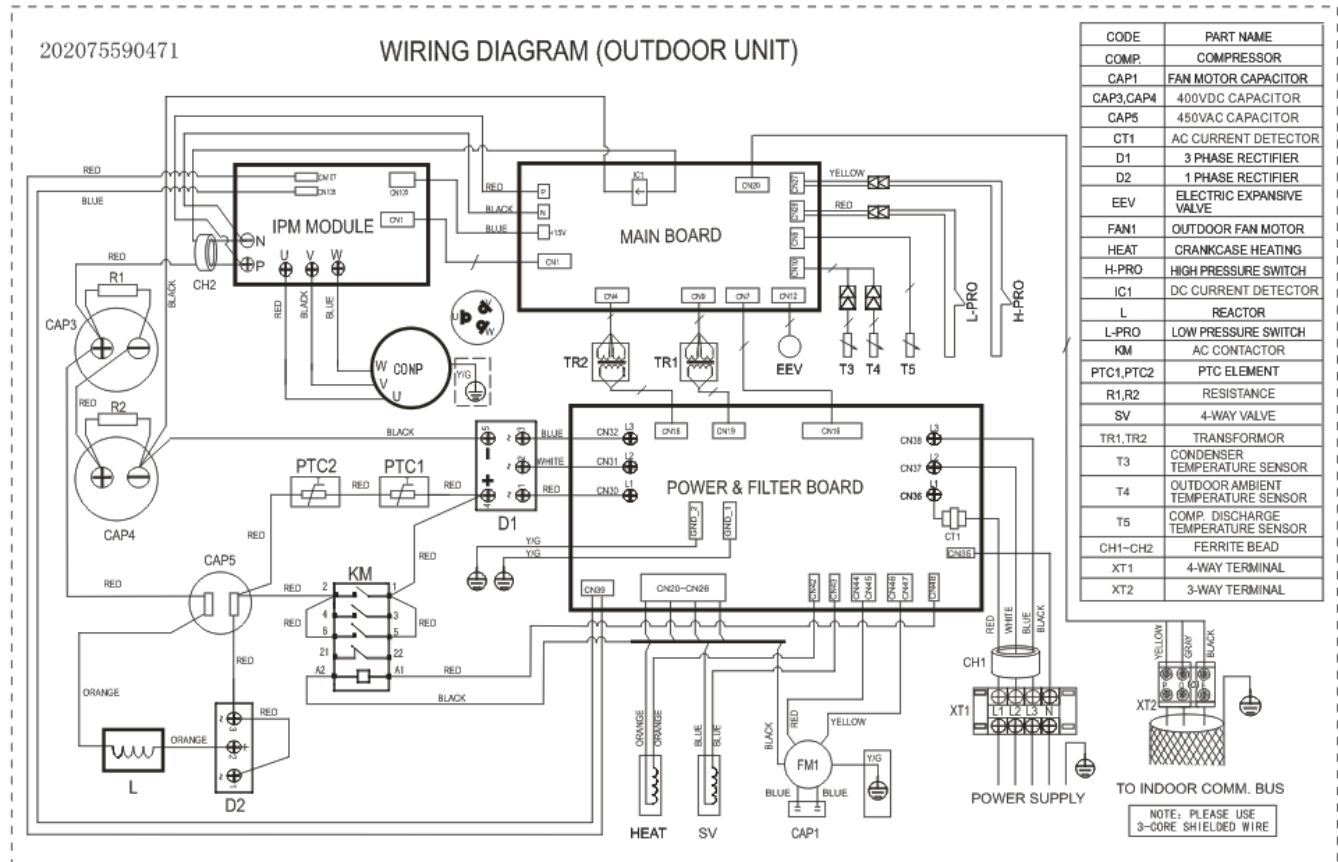


4. Wiring Diagrams

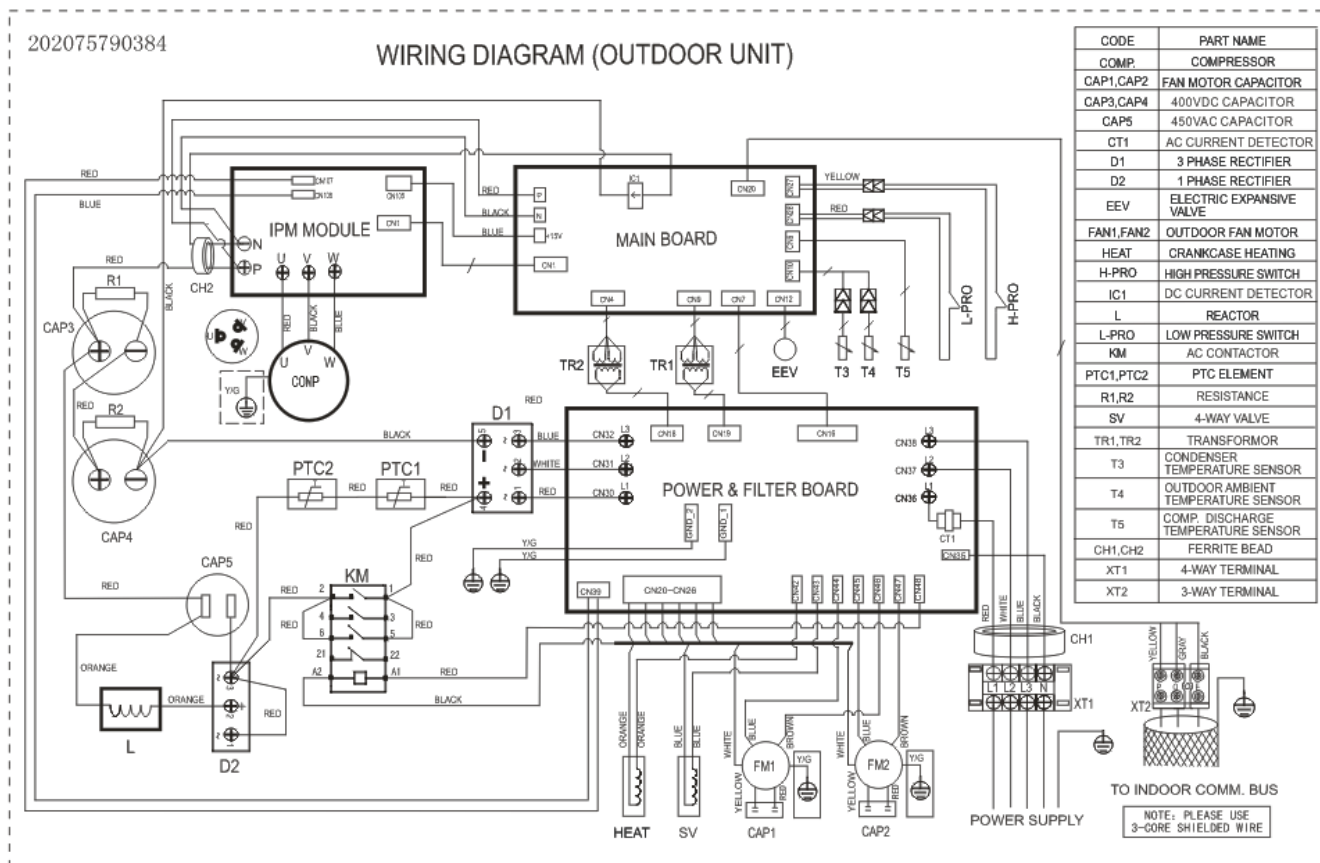
MOUB-36HDN1-Q MOU-48HDN1



MOUB-36HDN1-R



MOUB-48HDN1-R



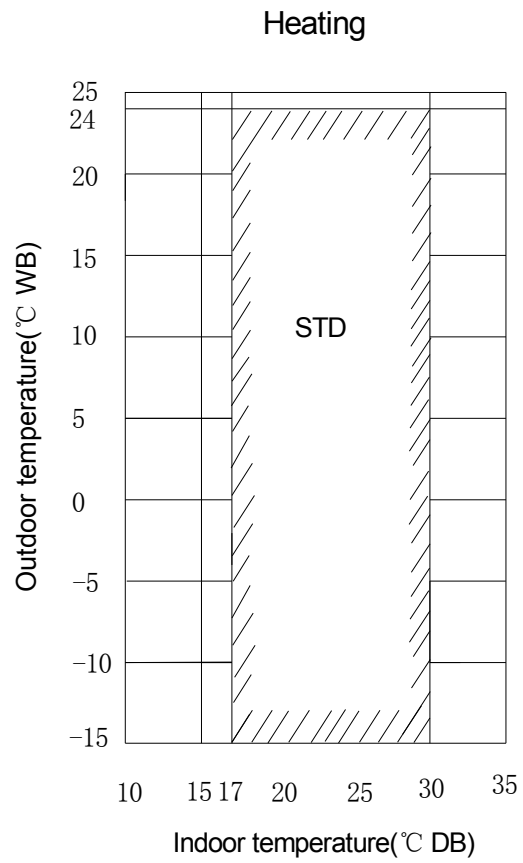
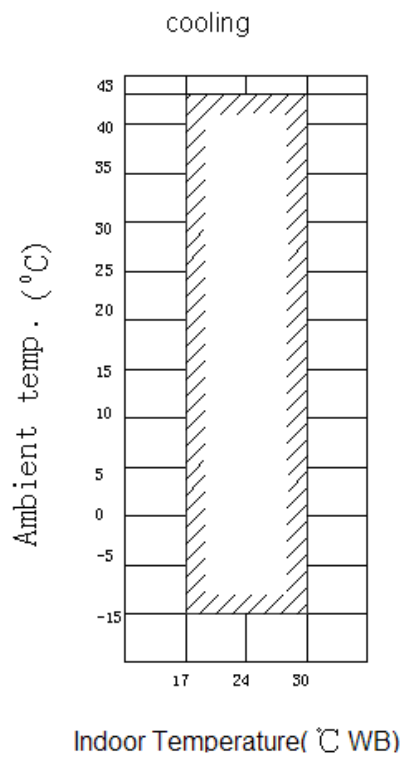
5. Electric Characteristics

Model	Outdoor Unit				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MOUB-36HDN1-Q	50	220-240	198	254	40
MOUB-36HDN1-R	50	380-415	342	440	40
MOU-48HDN1	50	220-240	198	254	40
MOUB-48HDN1-R	50	380-415	342	440	40

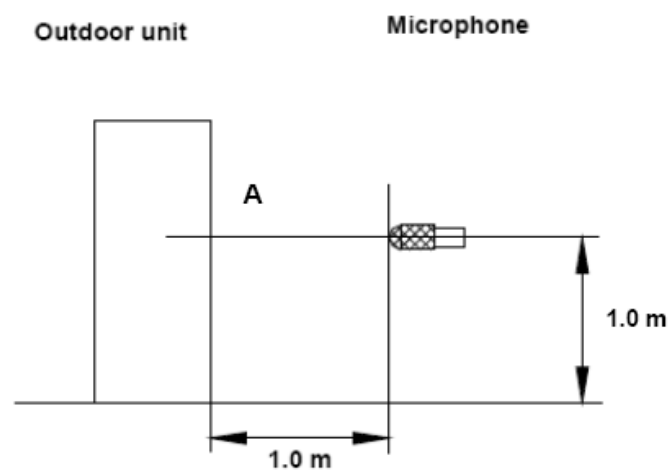
Remark:

MFA: Max. Fuse Amps. (A)

6. Operation Limits



7. Sound Levels



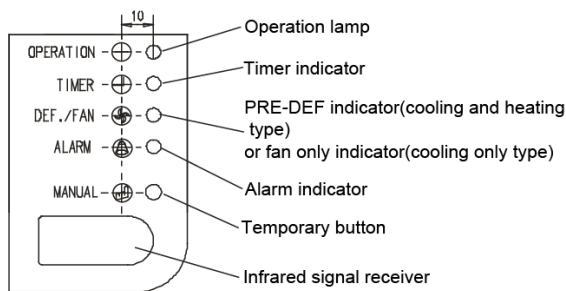
Model	Noise level dB(A)
	H/L
MOUB-36HDN1-Q	57/52
MOUB-36HDN1-R	55/50
MOU-48HDN1	59/54
MOUB-48HDN1-R	59/54

8. Troubleshooting

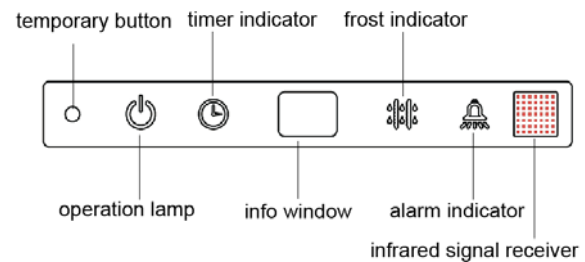
8.1 Indoor unit malfunction

8.1.1 Display board

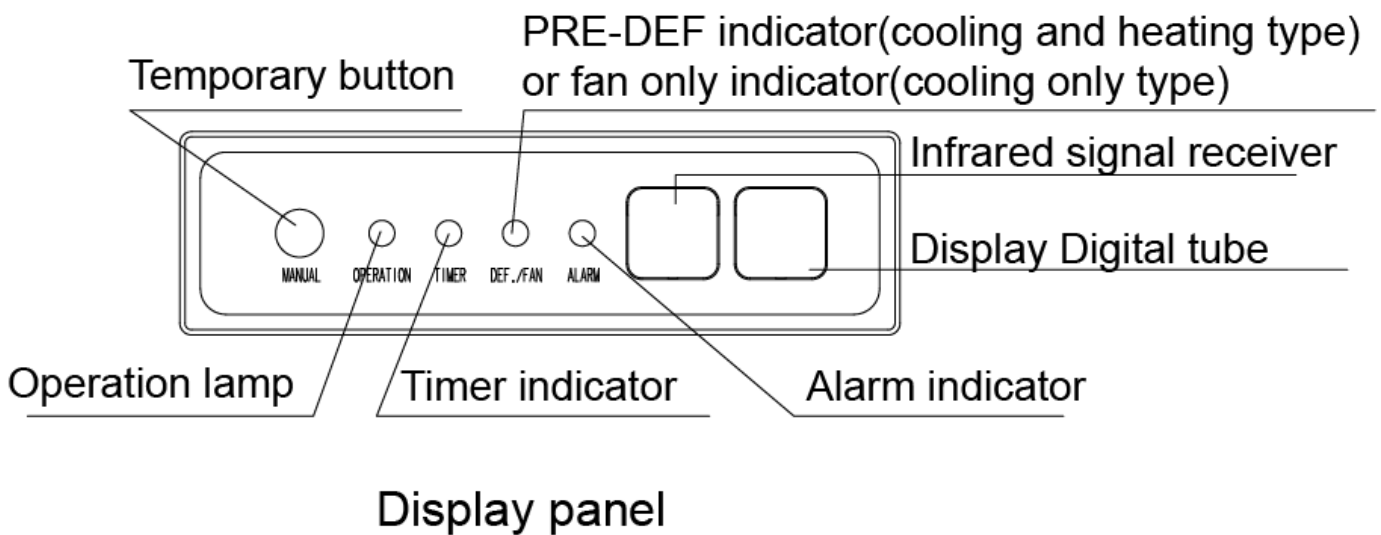
Ceiling & Floor



Normal 4-way cassette



Duct



8.1.2 Troubleshooting

For Normal 4-way cassette















NO.	Malfunction	running lamp	timer lamp	defrosting lamp	alarm lamp	display (nixie tube)
1	In-outdoor unit communication checking channel is abnormal		LED2 Quick-flash			E1
2	Room temperature sensor checking channel is abnormal	LED1 Quick-flash				E2
3	Pipe temperature sensor (T2) checking channel is abnormal	LED1 Quick-flash				E3
4	Pipe temperature sensor (T2B) checking channel is abnormal	LED1 Quick-flash				E4
5	Water-level alarm malfunction				LED4 Quick-flash	EE
6	EEPROM malfunction	LED1 Slow-flash				E7
7	Collision model malfunction			LED3 Quick-flash		E0
8	Outdoor malfunction				LED4 Slow-flash	Ed

For ceiling & floor

NO.	Malfunction	running lamp	timer lamp	defrosting lamp	alarm lamp
1	In-outdoor unit communication checking channel is abnormal	×	☆	×	×
2	Room temperature sensor checking channel is abnormal	☆	×	×	×
3	Water-level alarm malfunction	×	×	×	☆
4	Collision model malfunction	×	×	☆	×
5	Outdoor unit malfunction	×	×	×	slow flash

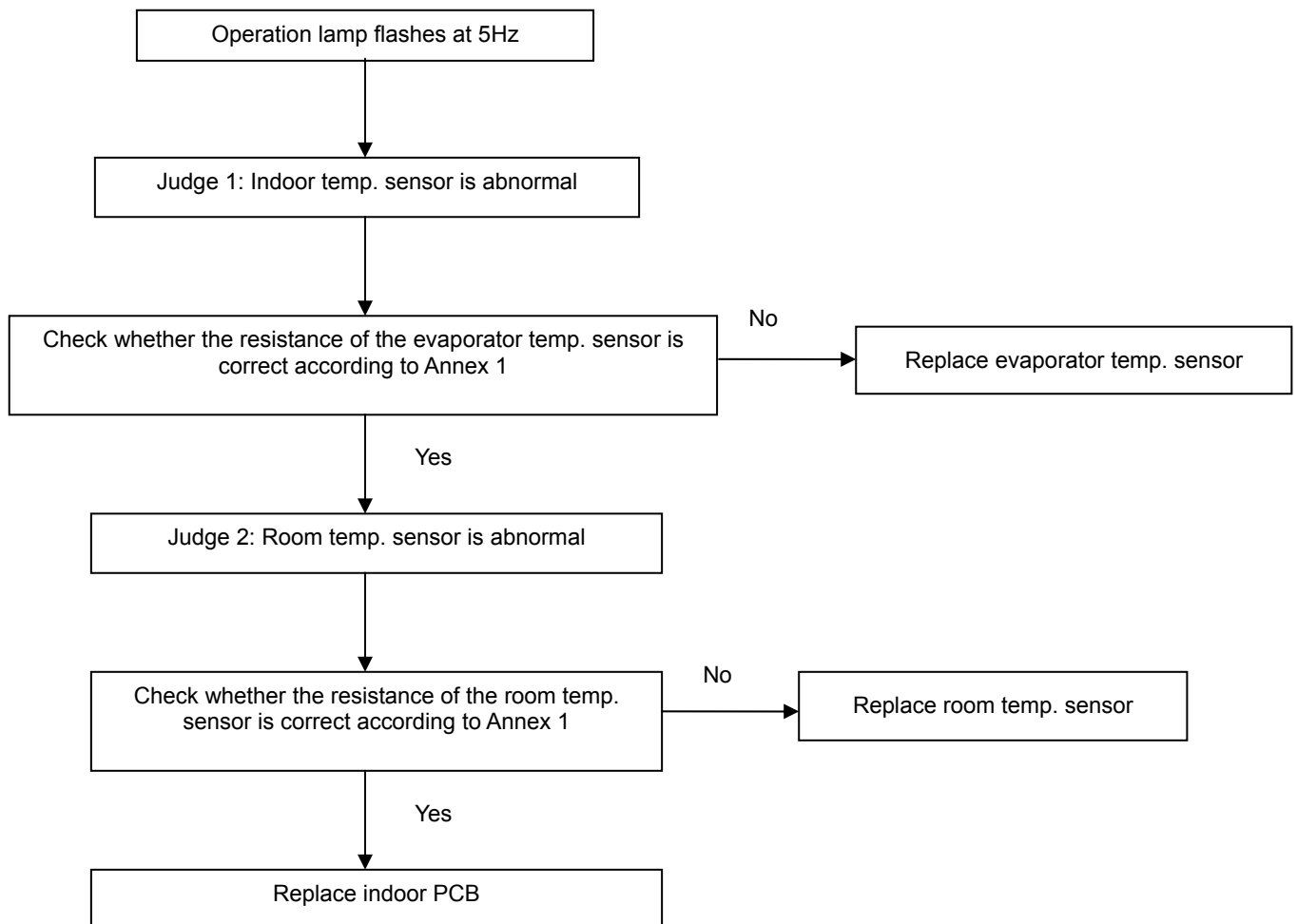
(× Extinguish, ☆ Flash at 5Hz)

For Duct type

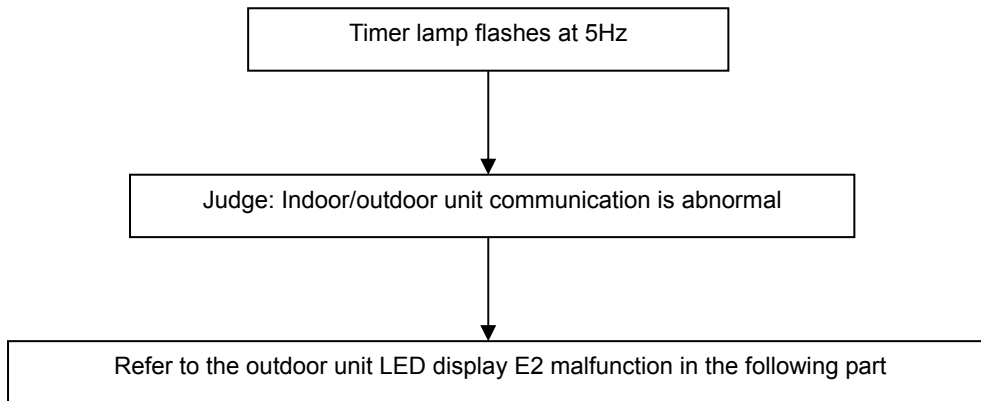
NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Collision mode malfunction					E0
2	In-Outdoor unit COMM. Checking channel is abnormal					E1
3	Room TEMP. sensor checking channel is abnormal					E2
4	Pipe TEMP. Sensor checking channel is abnormal (T2)					E3
5	Pipe TEMP. Sensor checking channel is abnormal (T2B)					E4
6	EPPROM malfunction					E7
7	Water-level alarm malfunction					EE
8	Outdoor malfunction					Ed
9	Be closed by the remote control function					CP
10	Avoid cold fan & Defrost					
 Light  Flashing at 5HZ  Flashing at 1HZ						

For MODEL 18-60

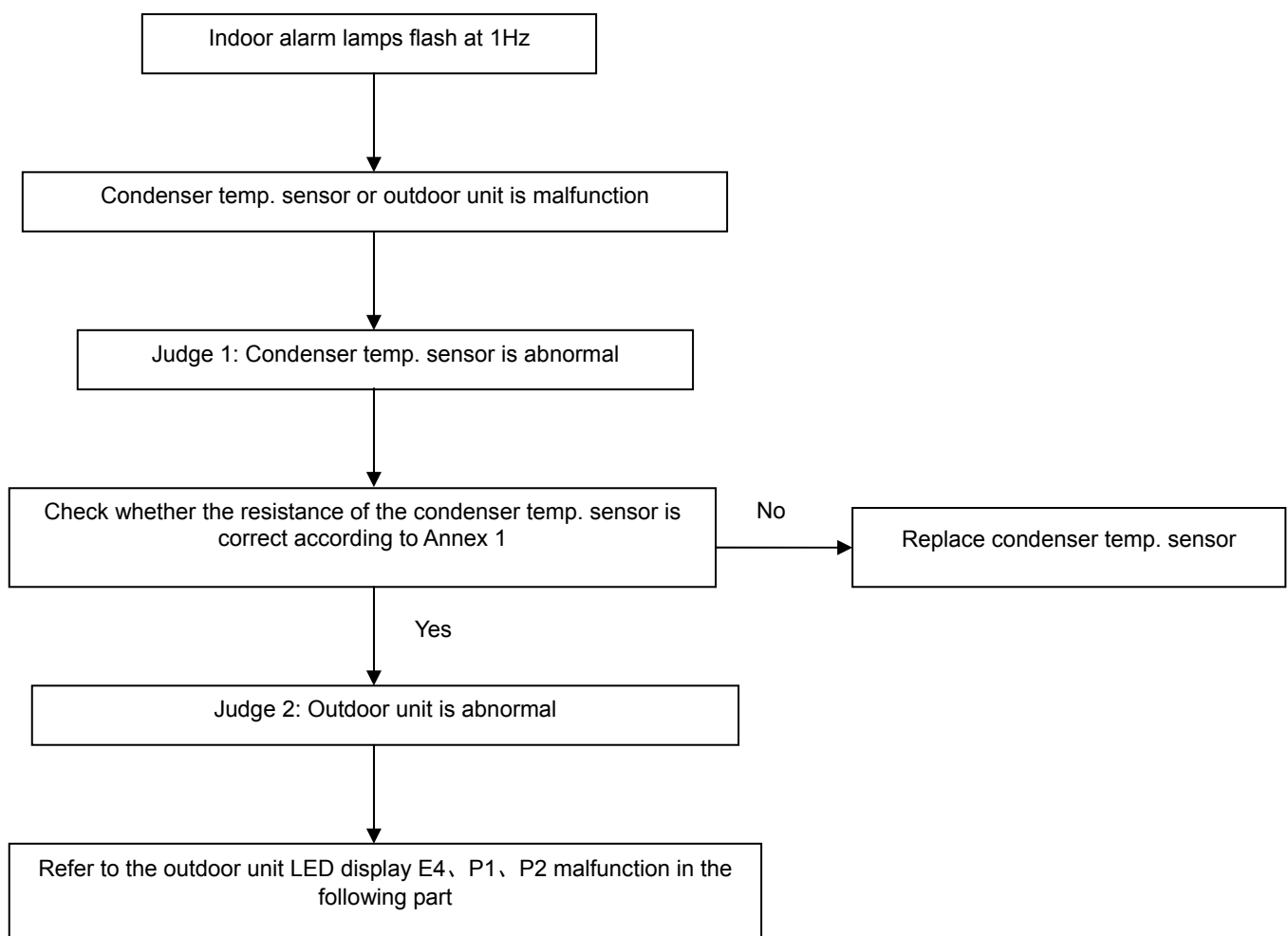
1. Operation lamp flashes



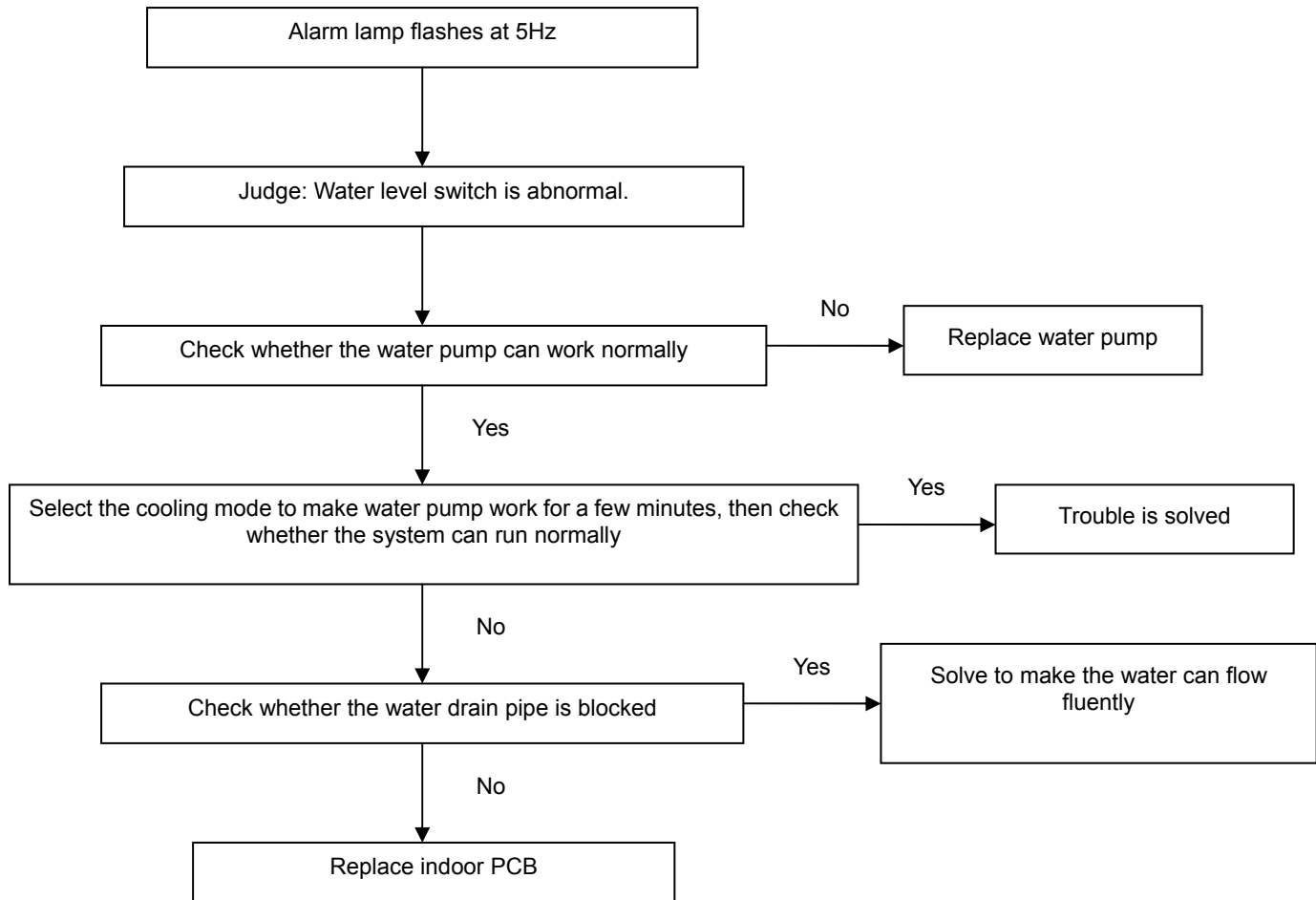
2. Timer lamp flashes



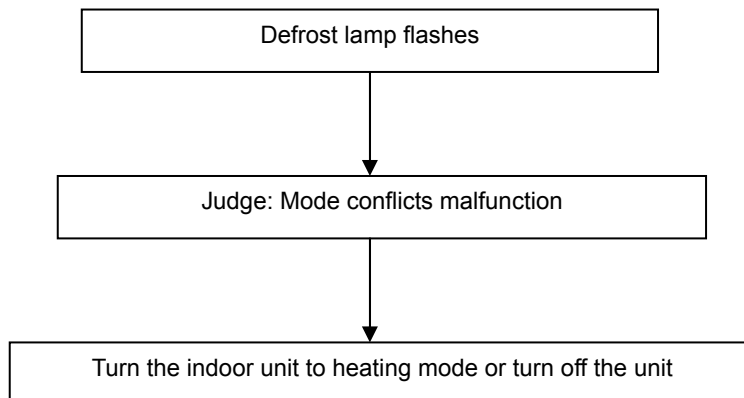
3. Alarm lamp slow-flash



3. Alarm lamp quick-flash



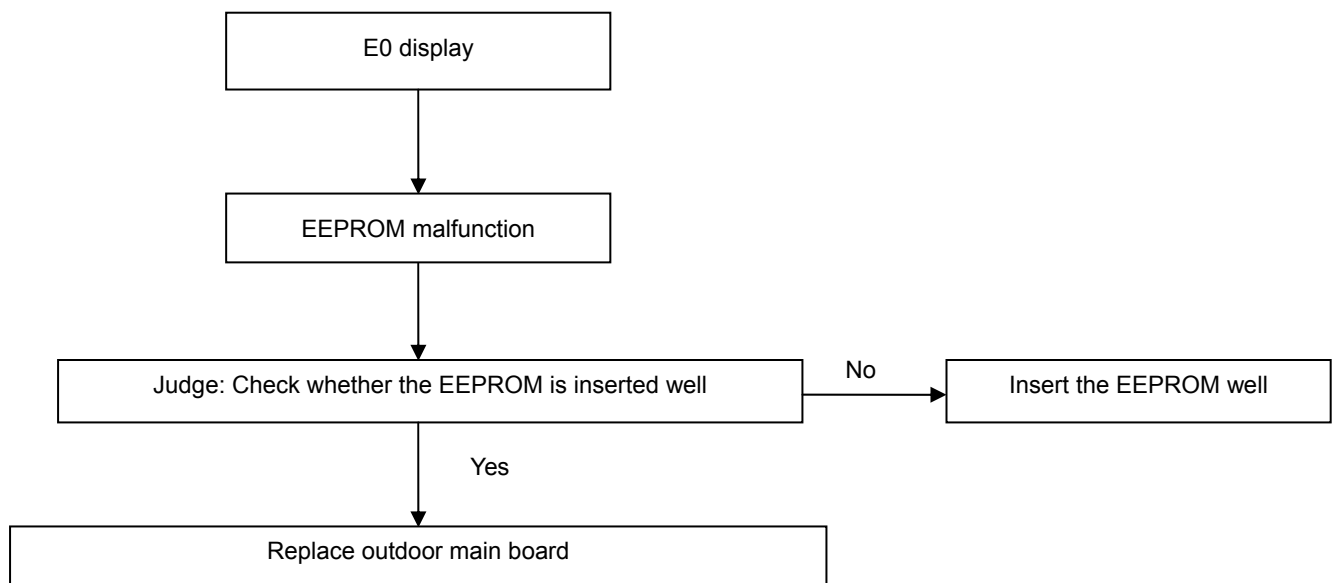
4. Defrost lamp flashes



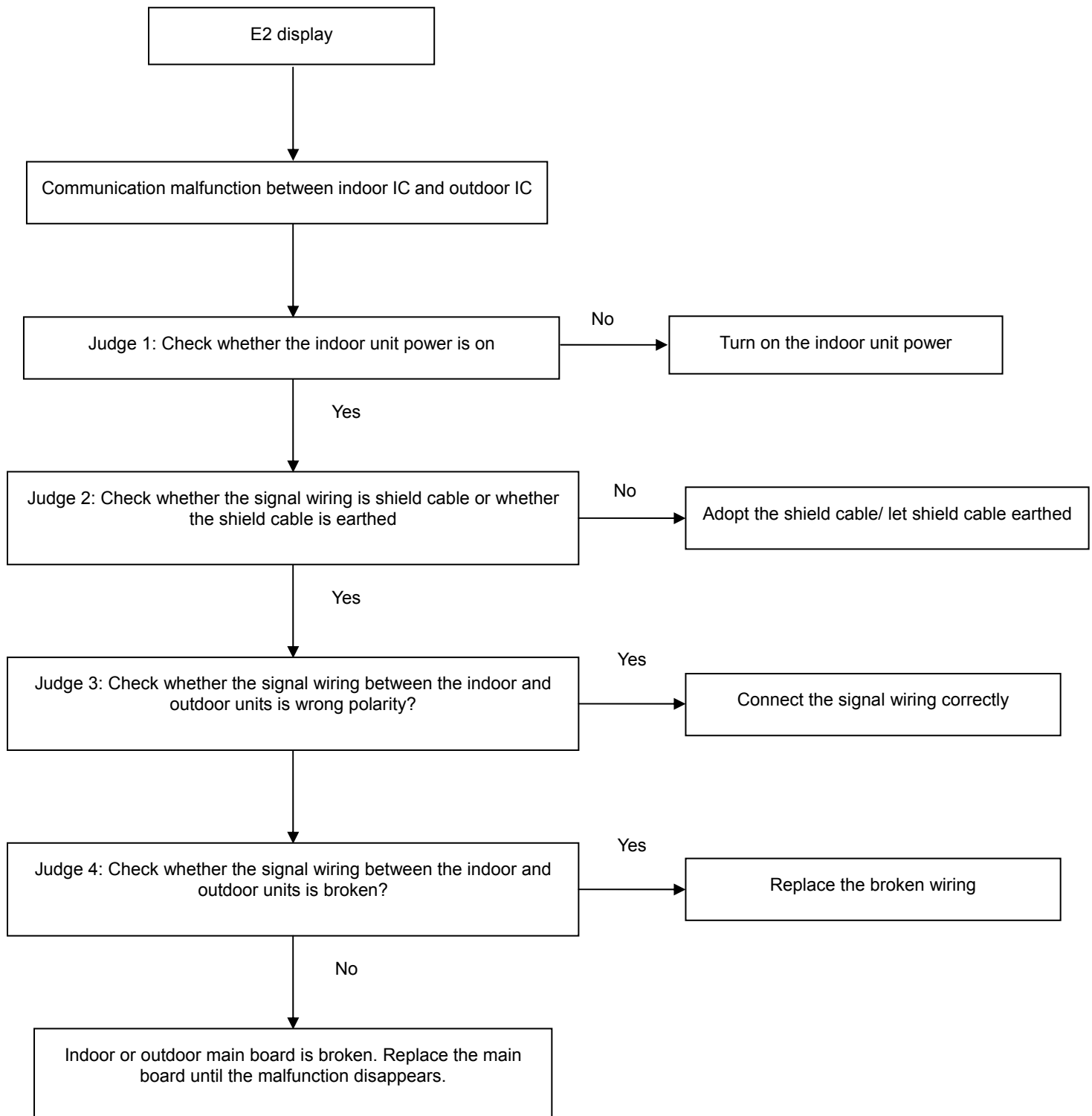
9.2 Outdoor unit malfunction

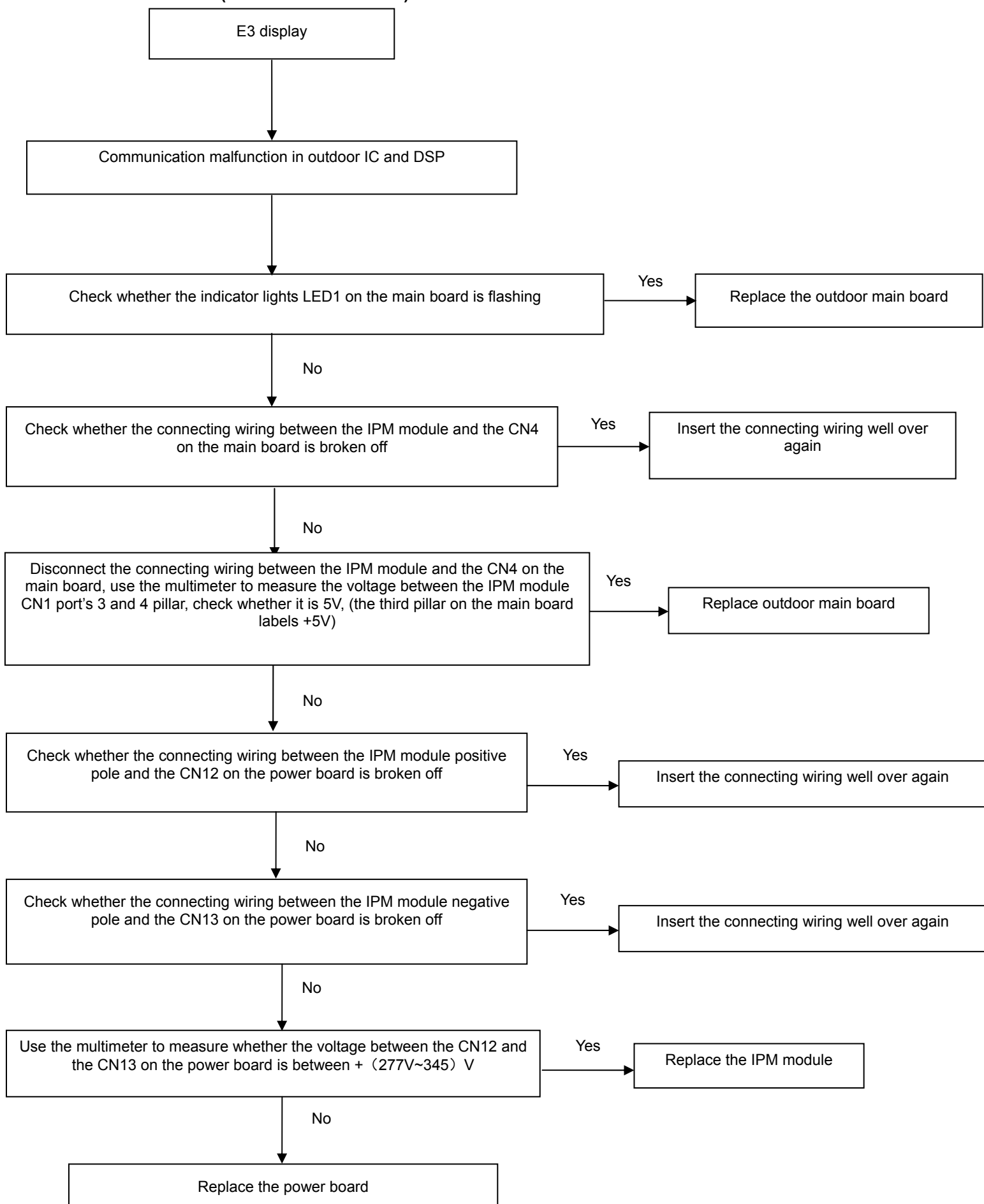
Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor IC and outdoor IC
E3	Communication malfunction in outdoor IC and DSP
E4	Malfunction of outdoor temperature sensor
E5	Voltage protection of compressor
E6	PFC module protection (Only for 30K, 36K & 48K with 1 phase)
P0	Top temperature protection of compressor
P1	High pressure protection
P2	Low pressure protection
P3	Current protection of compressor
P4	Discharge temperature protection of compressor
P5	High temperature protection of condenser
P6	Module protection

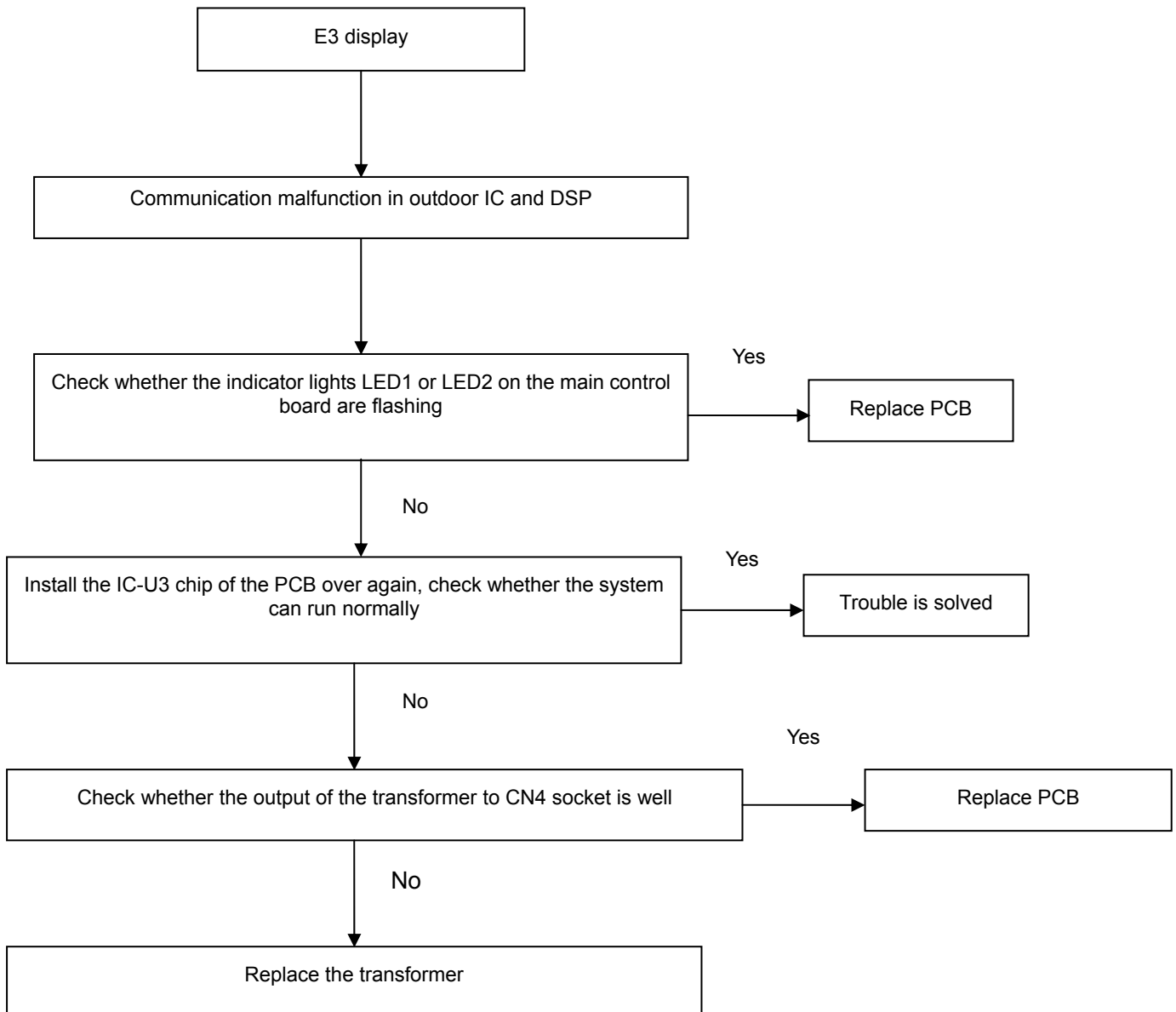
1. E0 malfunction



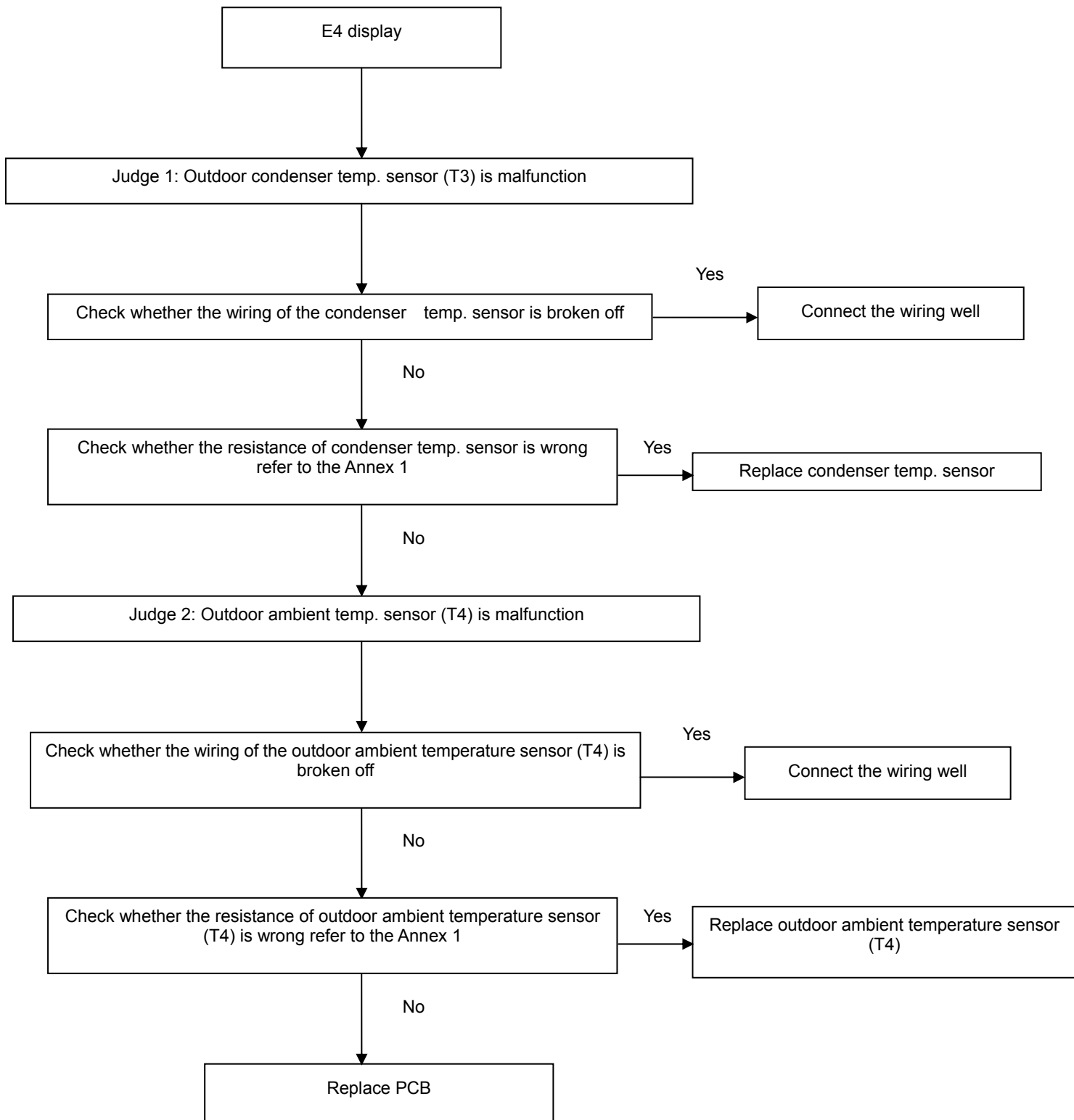
2. E2 malfunction

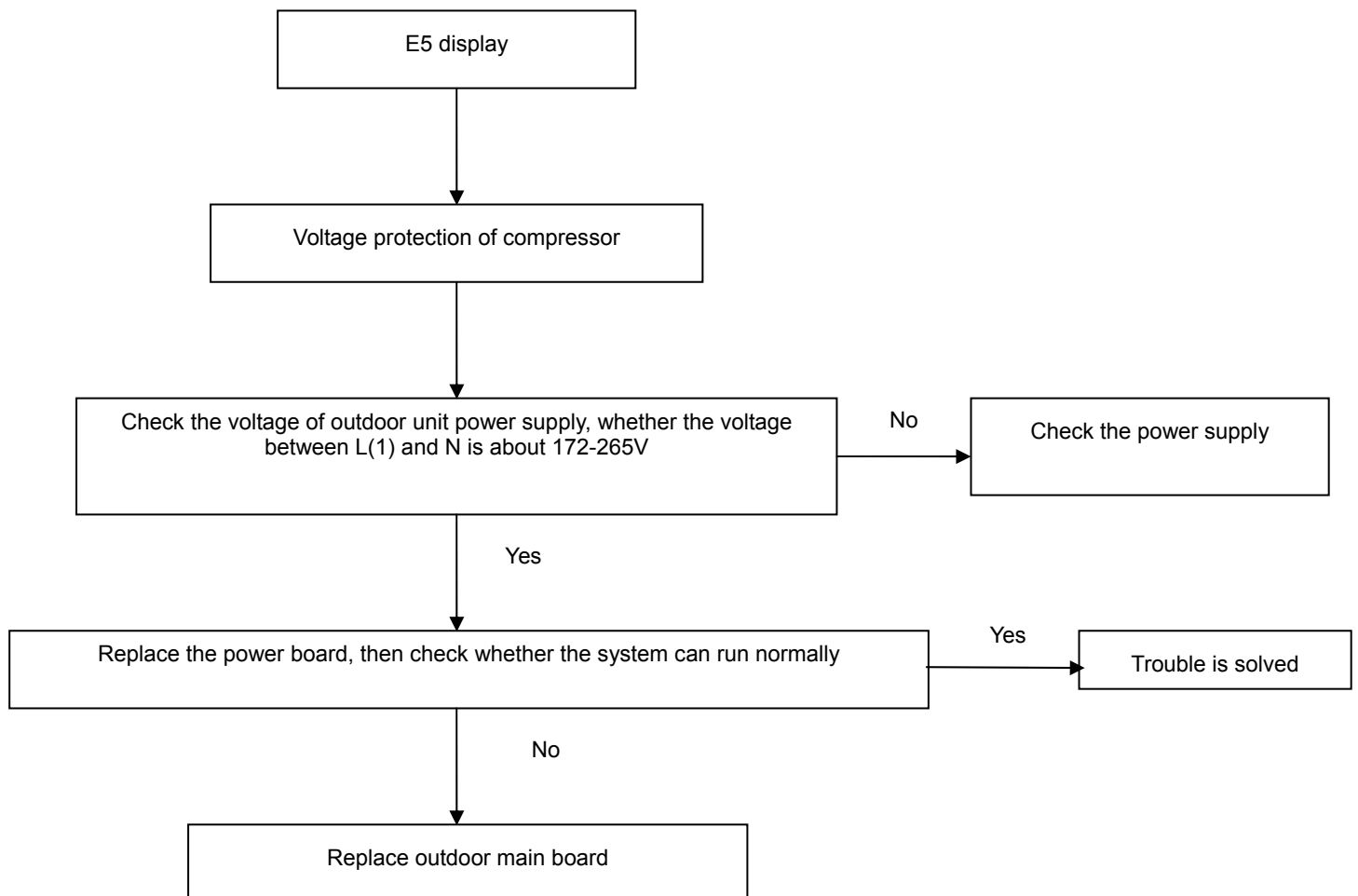
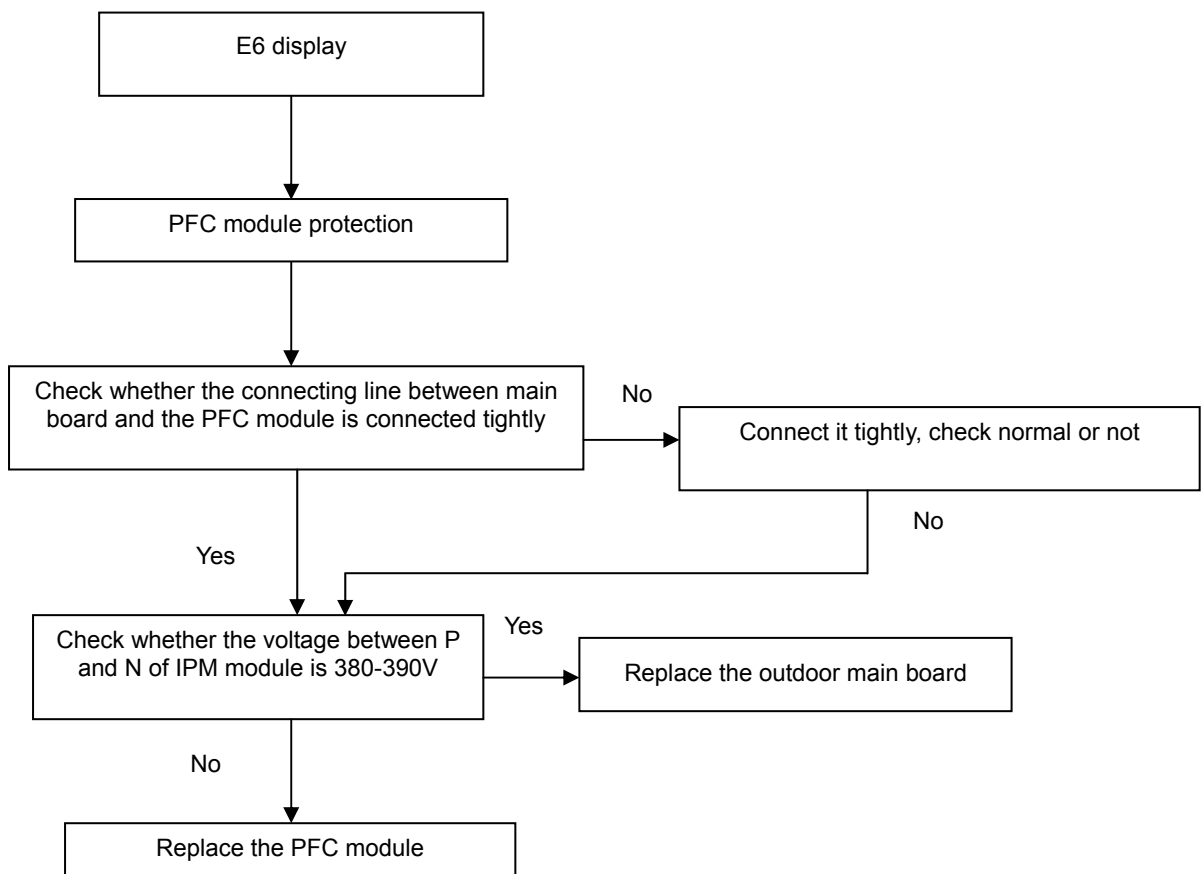


3. E3 malfunction (For 18K & 24K & 30K)

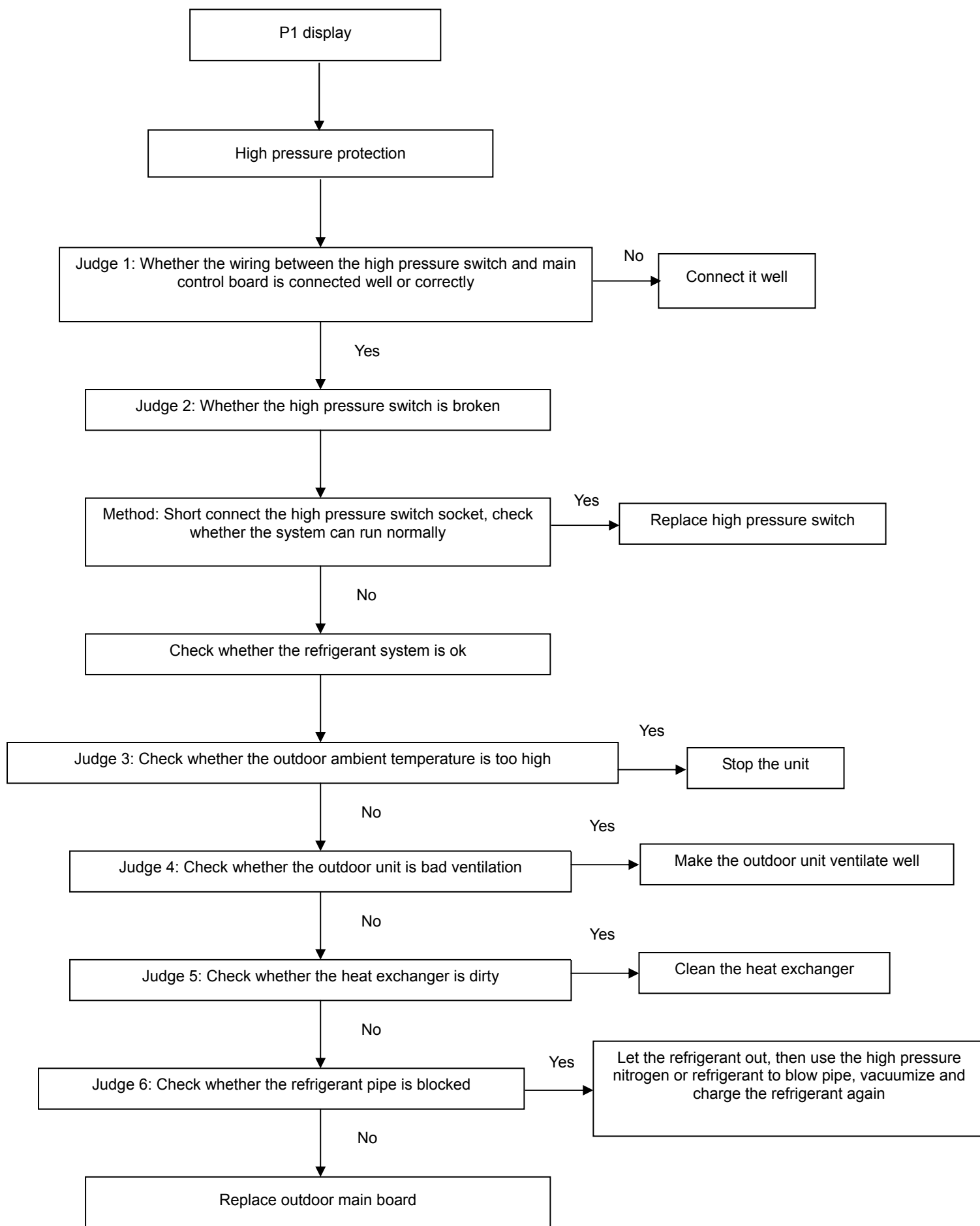
4. E3 malfunction (For 36K & 48K & 60K)

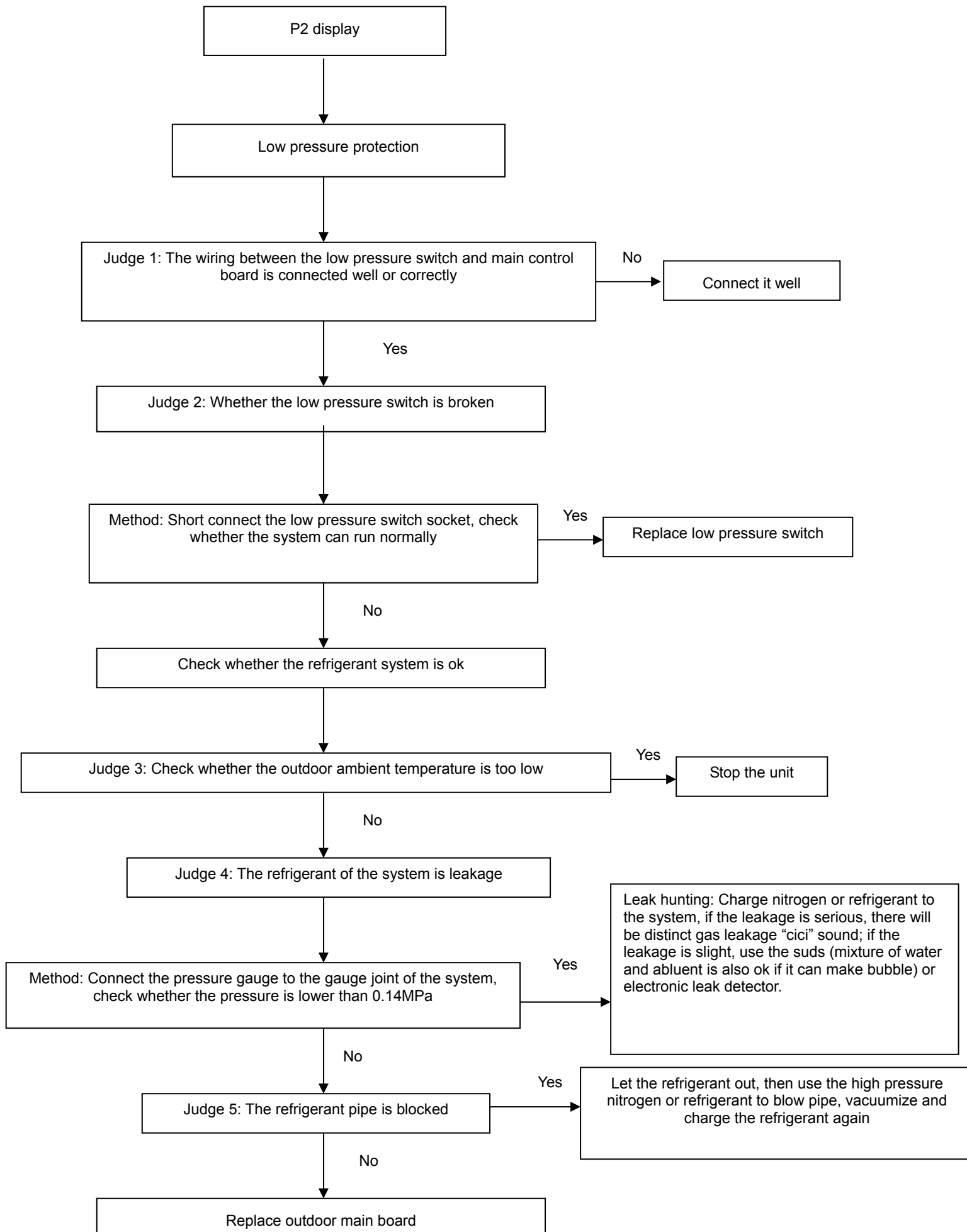
5. E4 malfunction



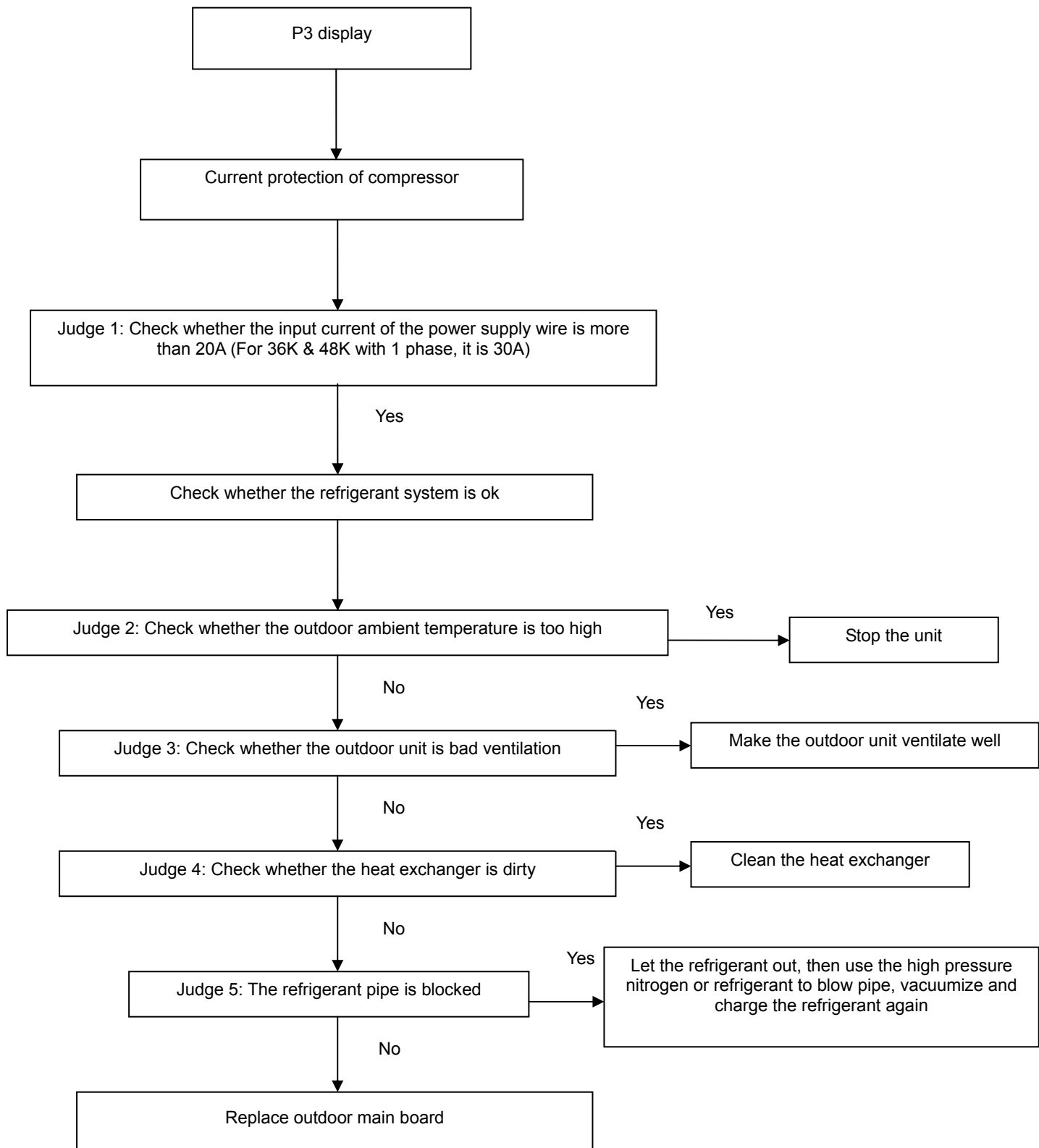
6. E5 malfunction**7. E6 malfunction (Only for 30K, 36K & 48K with 1 phase)**

8. P1 malfunction



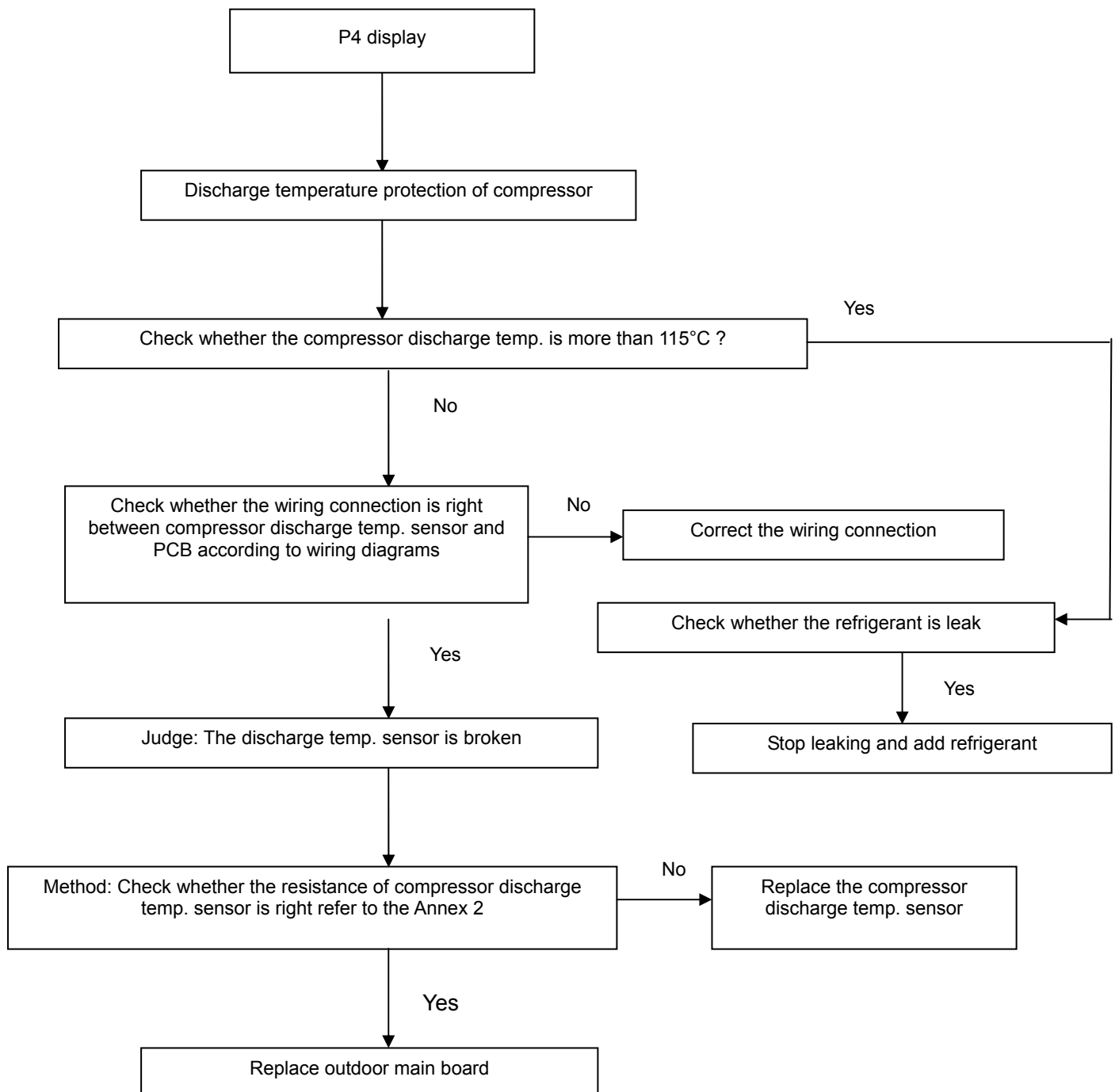
9. P2 malfunction

10. P3 malfunction



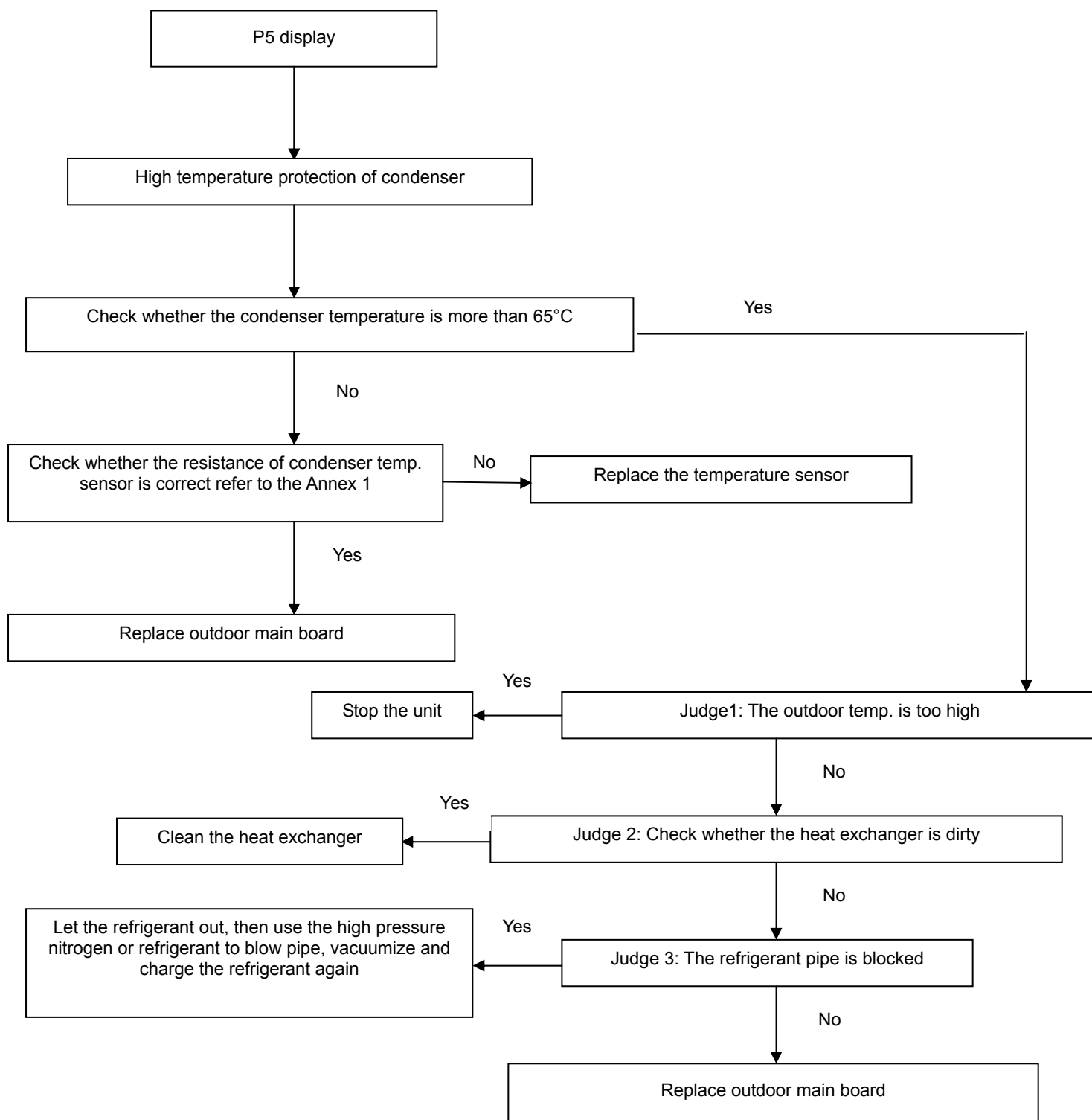
11. P4 malfunction

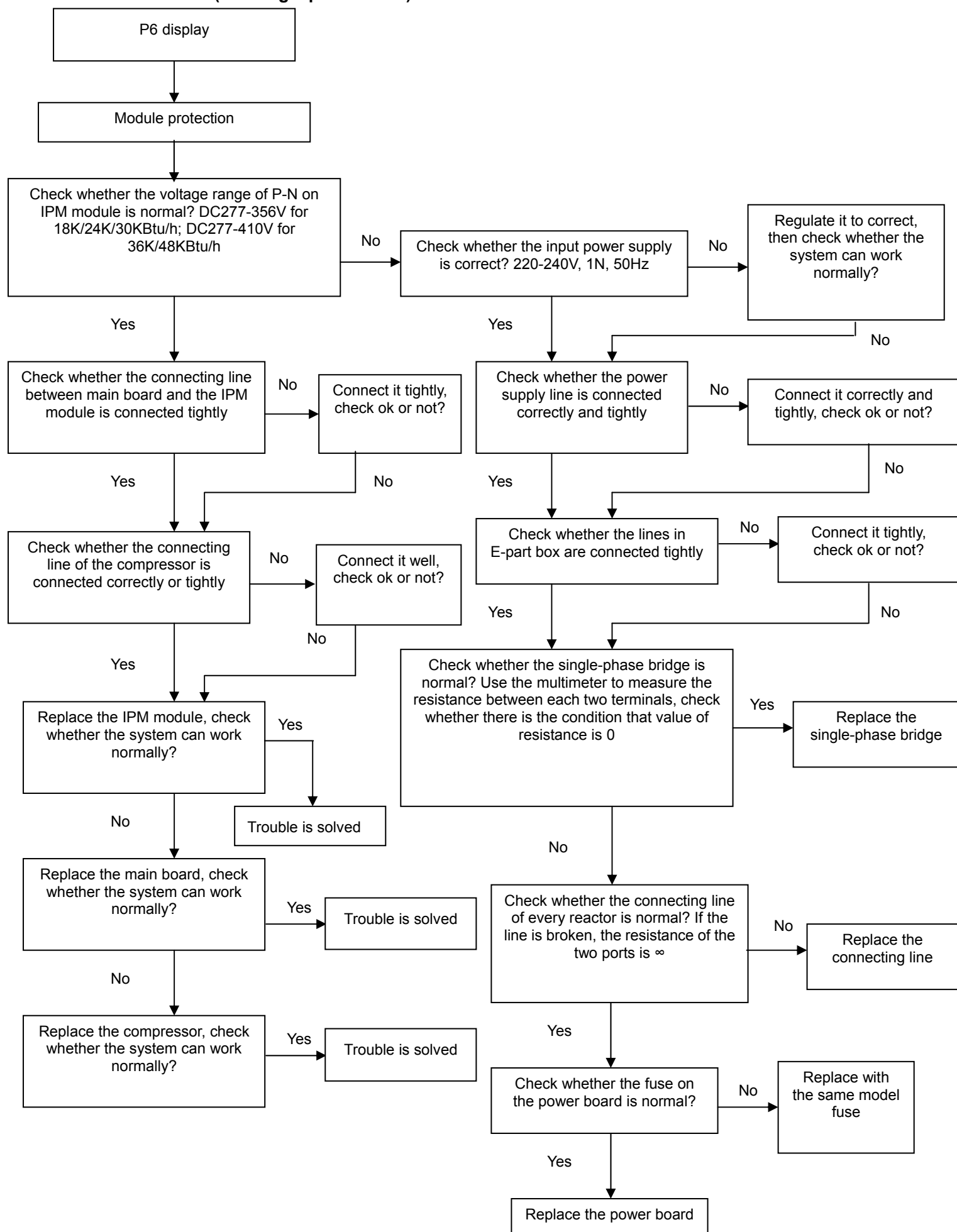
When compressor discharge temperature is higher than 115°C, the unit will stop, and unit runs again when compressor discharge temperature is lower than 90°C.



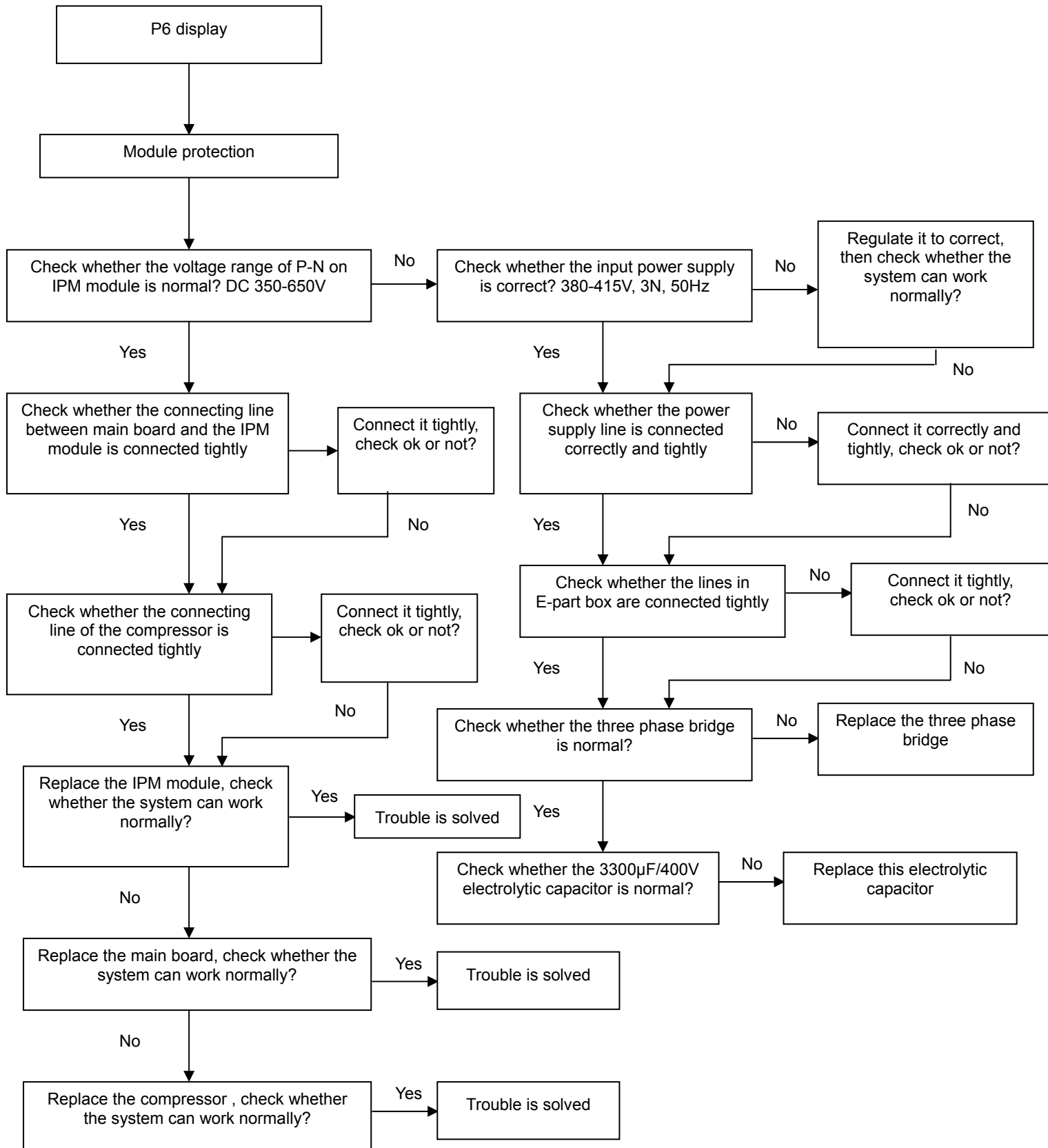
12. P5 malfunction

When condenser high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.



13. P6 malfunction (For single phase units)

14. P6 malfunction (For three phases units)



Appendix Indoor Temp. and Pipe Temp. Sensor Resistance Value Table (°C--K)

°C	K Ohm	°C	K Ohm	°C	K Ohm	°C	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	74.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.57050	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.32390
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

Part 4

Installation

1.Precauton on Installation.....	97
2.Vacuum Dry and Leakage Checking	98
3.Additional Refrigerant Charge	100
4.Water Drainage	101
5.Insulation Work	104
6.Wiring	105
7.Test Operation.....	106

1. Precaution on Installation

1). Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

Specially Notice the pipe length/height/dimension of each capacity.

Maximum pipe length

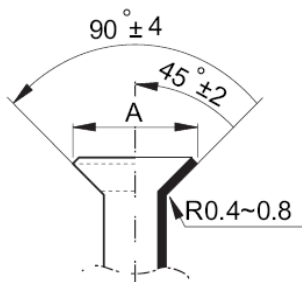
Model	Max. Length	Max. Elevation
12,000Btu/h	10m	5m
18,000Btu/h ~24,000Btu/h	25m	12m
30,000Btu/h	25m	15m
36,000Btu/h	30m	20m
48,000Btu/h~60,000Btu/h	50m	25m

Piping sizes

Model	Liquid(mm)	Gas(mm)
12,000Btu/h~18,000Btu/h	6.4	12.7
24,000Btu/h~60,000Btu/h	9.5	15.9

CAUTIONS

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fasten the flare nuts.
- Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A Min (mm) Max		Flare shape
Φ6.4	14.2~17.2N.m (144~176 kgf.cm)	8.3	8.7	
Φ9.5	32.7~39.9N.m (333~407kgf.cm)	12.0	12.4	
Φ12.7	49.5~60.3N.m (504~616kgf.cm)	15.4	15.8	
Φ15.9	61.8~75.4N.m (630~770 kgf.cm)	18.6	19.1	
Φ19.1	97.2~118.6N.m (990~1210kgf.cm)	22.9	23.3	

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

2) Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

3) Connect the pipes.

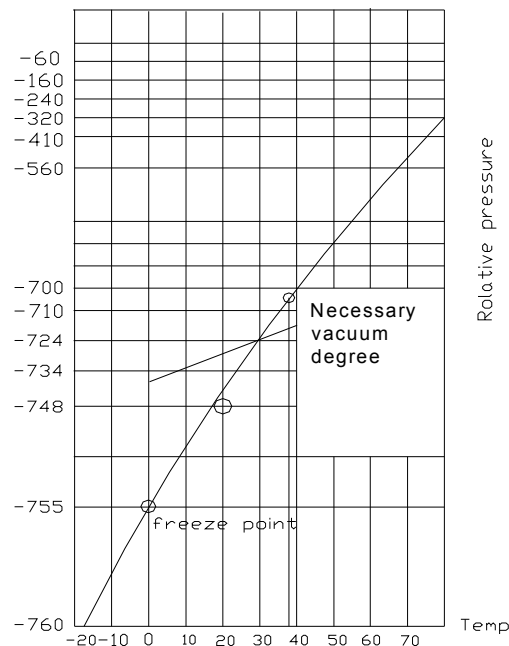
4) Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

5) Be sure of no leakage by checking it with leak detector or soap water.

6) Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

2. Vacuum Dry and Leakage Checking

- 1) Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100°. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

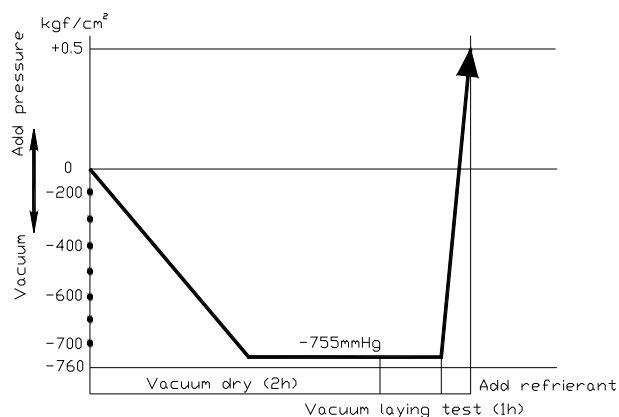


2) Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

□. Common vacuum dry procedure

- Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.



☐ Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter into the pipe.
- Vacuum dry for the first time 2h pumping

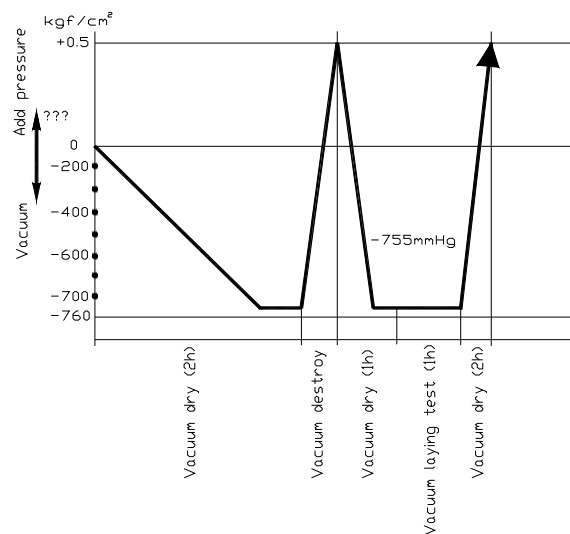
☐ Vacuum destroy for the second time Fill nitrogen to 0.5Kgf/cm²

Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

- ☐ Vacuum dry for the second time 1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure ☐ and ☐.

- ☐ Vacuum placing test 1h
- ☐ Sketch map of special vacuum dry procedure



3. Additional Refrigerant Charge

Caution

- Refrigerant cannot be charged until field wiring has been completed.
- Refrigerant may only be charged after performing the leak test and the vacuum pumping.
- When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
- Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
- Refrigerant containers shall be opened slowly.
- Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit.

R(g) \ D(mm)	φ6.4	Φ9.5	Φ12.7
L(m)			
Less than 5m (One-way)	—	—	—
Added Refrigerant When Over 5m(One-way)	11g/m×(L-5)	30g/m×(L-5)	60g/m×(L-5)

Remark:

R (g): Additional refrigerant to be charged

L (m): The length of the refrigerant pipe (one-way)

D (mm): Liquid side piping diameter

4. Water Drainage

4.1 Gradient and Supporting

- 1). Keep the drainpipe sloping downwards at a gradient of at least 1/50. Keep the drainpipe as short as possible and eliminate the air bubble.
- 2). The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/50 and prevent bending. Refer to the following table for the specification of the prop stand.

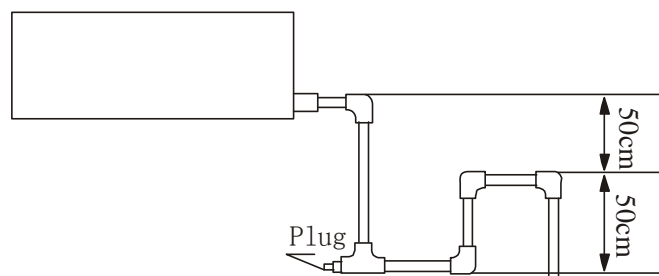
	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

3). Precautions

- ☐ The diameter of drainpipe should meet the drainage requirement at least.
- ☐ the drainpipe should be heat-insulated to prevent atomization.
- ☐ Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.
- ☐ All connection should be firm.
- ☐ Wipe color on PVC pipe to note connection.
- ☐ Climbing, horizontal and bending conditions are prohibited.
- ☐ The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- ☐ Heat-insulation should be done well to prevent condensation.
- ☐ Indoor units with different drainage type can't share one convergent drainpipe.

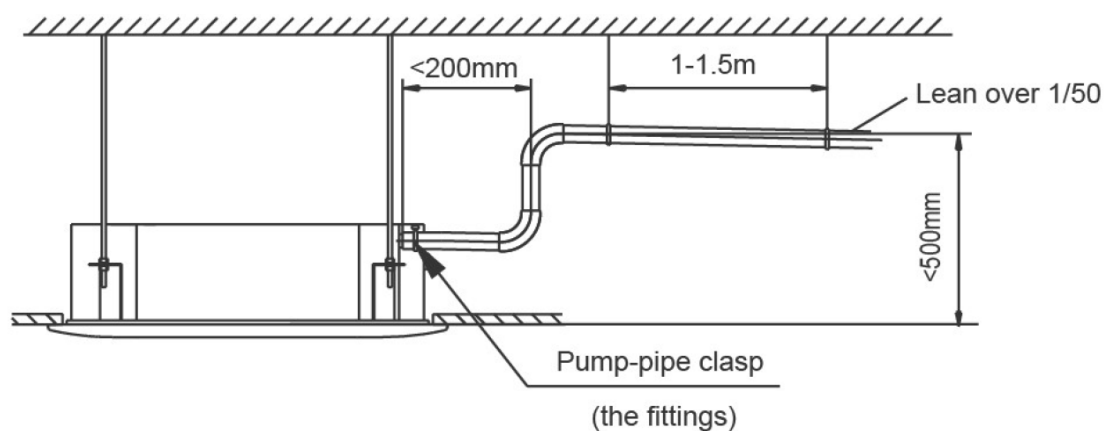
4.2 Drainpipe Trap

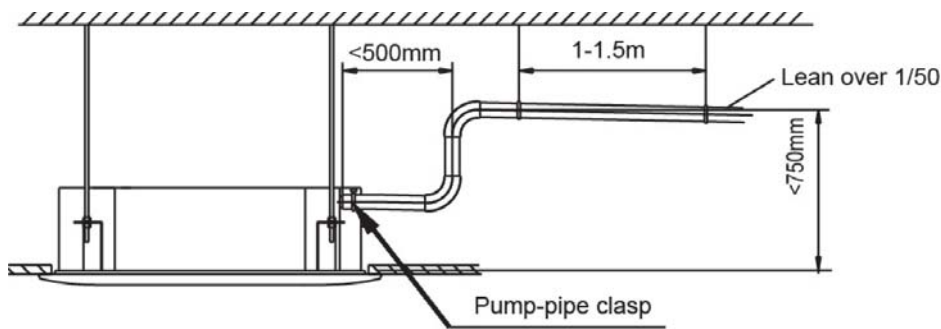
- 1). If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.
- 2). Every indoor unit needs one drainpipe trap.
- 3). A plug should be designed to do cleaning.



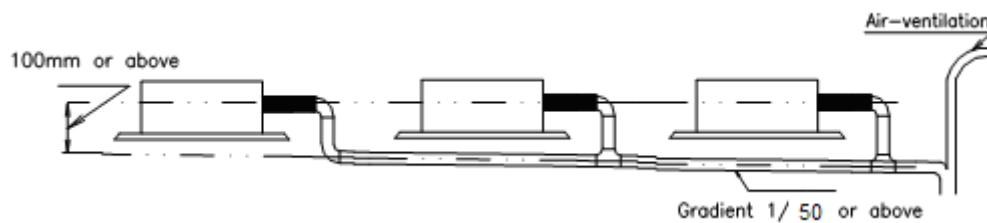
4.3 Upwards drainage (drain pump)

For Four-way cassette(compact)



For Four-way cassette**4.4 Convergent drainage**

- 1). The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.
- 2). Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



- 3). Selecting the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter

Calculate allowed volume = Total cooling capacity of indoor units (HP) × 2 (l/ hr)

	Allowed volume(lean 1/50) (l/ hr)	I.D. (mm)	Thick
Hard PVC	≤ 14	$\varnothing 25$	3.0
Hard PVC	$14 < \leq 88$	$\varnothing 30$	3.5
Hard PVC	$88 < \leq 334$	$\varnothing 40$	4.0
Hard PVC	$175 < \leq 334$	$\varnothing 50$	4.5
Hard PVC	$334 < \infty$	$\varnothing 80$	6.0

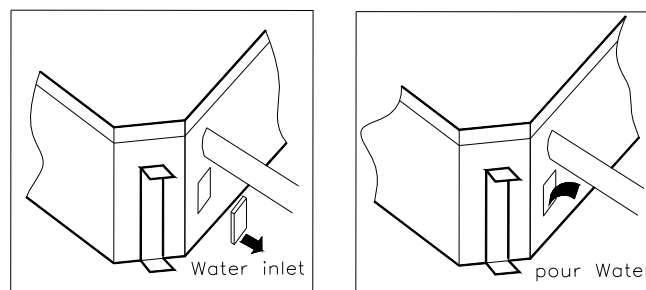
4.5 Drainage test

- 1). Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

- 2). Drainage with drain pump

- ☐ Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.



- ☐ Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

□ Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormality. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

5. Insulation Work

5.1 Insulation material and thickness

1). Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70℃ in the high-pressure side, no less than 120℃ in the low-pressure side (For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)

Cooling only type---- Polyethylene foam (withstand above 100℃)

2). Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameter Φ20—Φ32	6mm

5.2 Refrigerant pipe insulation

1). Work Procedure

- Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.
- When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

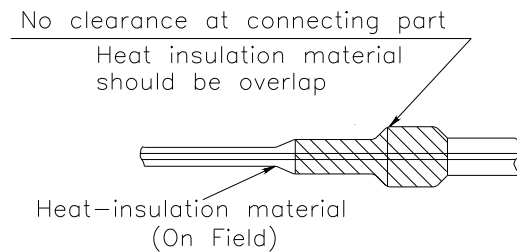
2). Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

3). Insulate for the jointing area, expanding area and the flange area

- ☐ Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes
- ☐ Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



5.3 Drainage pipe insulation

- 1) The connection part should be insulated, or else water will be condensing at the non-insulation part.

5.4 Note

- 1) The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test
- 2) The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.
- 3) Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut) of the indoor unit.

6. Wiring

Please refer to the Wiring Diagram.

7. Test Operation

(1) The test operation must be carried out after the entire installation has been completed.

(2) Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.

(4) Test operation

Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5

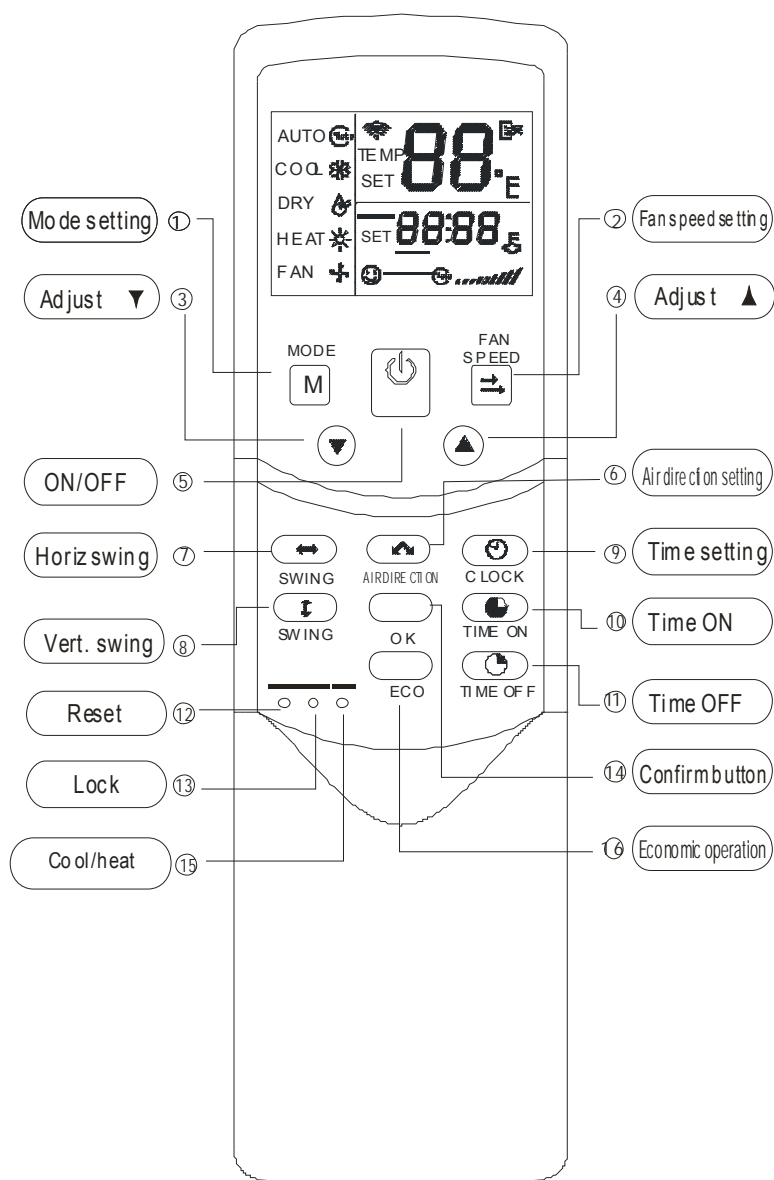
Control

1.Controller.....	108
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1. Controller

1.1 R05/BGE

The R05/BGE wireless remote controller is for Four-way cassette type and the Ceiling& floor type.



Visual photo

1.3 General Function for wireless remote controller:

Model and Specification

Model	R05/BGE
Rated voltage	3.0V(2pieces of LR03 7 # batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60℃

Buttons and functions

1. **MODE:** Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

2. **FAN SPEED:** Fan speed will be selected in following sequence once pressing this button:



3. **Adjust ▼** : Decrease the set temp. Keeping pressing will decrease the temp with 1□ per 0.5s.

4. **Adjust ▲** : Increase the set temp. Keeping pressing will increase the temp with 1□ per 0.5s.

5. **ON/OFF:** For turning on or turning off the air conditioner.

6. **AIR DIRECTION:** Activate swing function of air deflector. Once pressing, air deflector will turn 6°. For normal operation and better cooling and heating effect, deflector will not turn to the degree which is the state of deflector when the unit is turned off. (Only available when remote controller is used with corresponding unit.)

7. **HORIZ SWING:** Activate or turn off horizontal swing function. (Only available when remote controller is used with corresponding unit, i.e. Ceiling & floor type)

8. **VERT SWING:** Activate or turn off vertical swing function.

(Only available when remote controller is used with corresponding unit.)

9. **CLOCK:** Display the current time. (12:00 is displayed when resetting or electrifying for the first time.)

Press CLOCK for 5s, icon indicating hour will flash with 0.5s. Press it again; icon indicating minute will flash with 0.5s. ▼ and ▲ are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.

10. **TIME ON:** For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

11. **TIME OFF:** For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. **RESET** (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

13. **LOCK** (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.

14. **OK:** Used to confirm the time setting and modification.

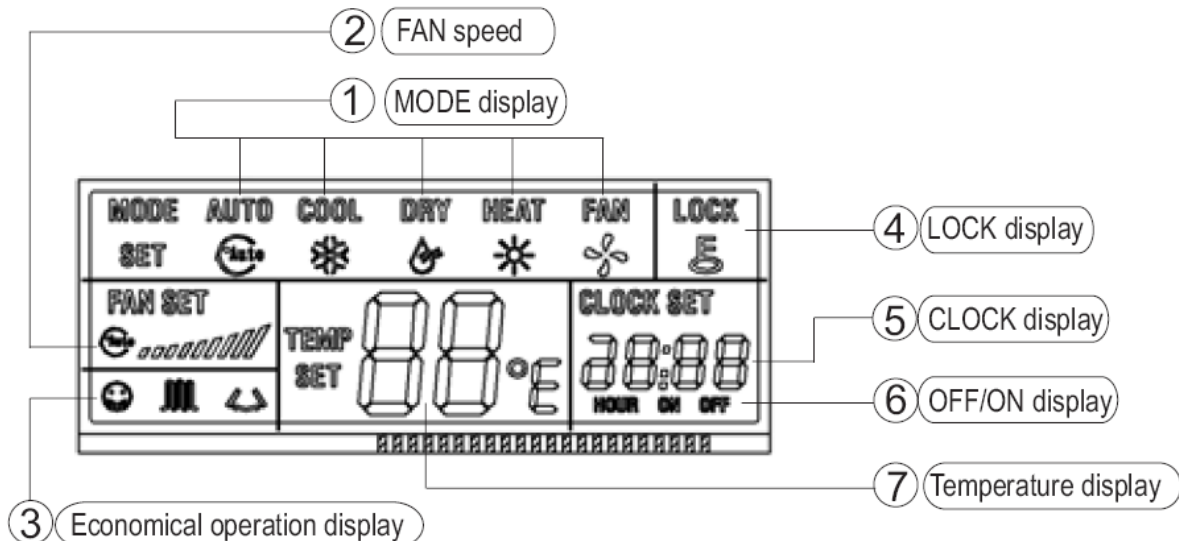
15. **COOL/HEAT** (inner located): Press this button with a needle of 1mm to shift mode between COOL only and COOL&HEAT. During setting, background light will be lightened. Factory default mode is COOL & HEAT.

16. **ECO:** Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

1.2 KJR-10B



NAME AND FUNCTION OF LCD ON THE WIRE CONTROLLER



1 Mode select button (MODE):

Press MODE button to select "COOL", "DRY", "HEAT", or "FAN ONLY" mode. (HEAT is invalid for COOL ONLY wire controller.)

AUTO → COOLING → DEHUMIDIFY → HEATING → FAN

2 Fan speed button (FAN SPEED)

Press FAN SPEED to select fan speed from "AUTO", "LOW", "MED", and "HIGH". NOTE: some air conditioners have no MED fan speed, and then the MED is regarded as HIGH.

3 Economical operation displays:

Press ECONOMICAL to display economical operation, if press ECONOMICAL again then the display disappears

4 Lock display

Press LOCK to display the icon of LOCK. Press the button again then the icon of LOCK disappears. In the mode of LOCK, all the buttons are invalid except for LOCK button.

5 CLOCK display.

Usually display the clock set currently. Press the button CLOCK for 4 seconds, the HOUR part will flash, press button ▲ and ▼ to adjust HOUR. Press the button CLOCK again, the minute part flash, press button▲ or▼ to adjust MINUTE. After clock set or clock operation, it must press CONFIRM to complete the set.

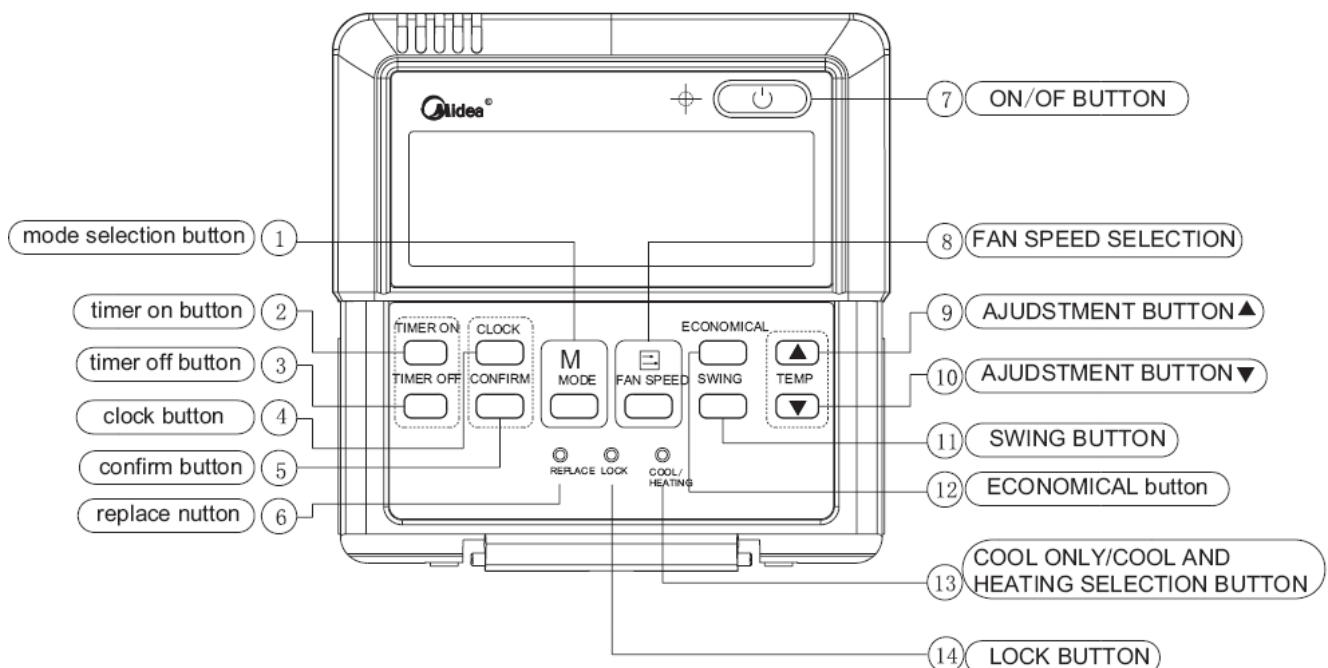
6 TIMER ON/OFF display:

Display ON at the state of TIMER ON adjustment or after only set the TIMER ON; Display OFF at the state of TIMER OFF adjustment or after only set the TIMER OFF; Display ON/OFF if simultaneously set the mode of TIMER ON and TIMER OFF.

7 Temperature display area:

Usually display the set temperature. Press the buttons of and to set temperature, at the mode of FAN, there is no figure display in the area.

NAME AND FUNCTIONS OF BUTTONS ON WIRE CONTROLLER



1 mode selection button:

It is used to select mode, push the button one time, then the operation modes will change In turn as follows:

AUTO→ COOLING →DEHUMIDIFY →HEATING→ FAN

Remark: no heating mode if wire controller is set as the cool only.

2 Timer on button:

Push the button to set TIMER ON, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0

3 Timer off button:

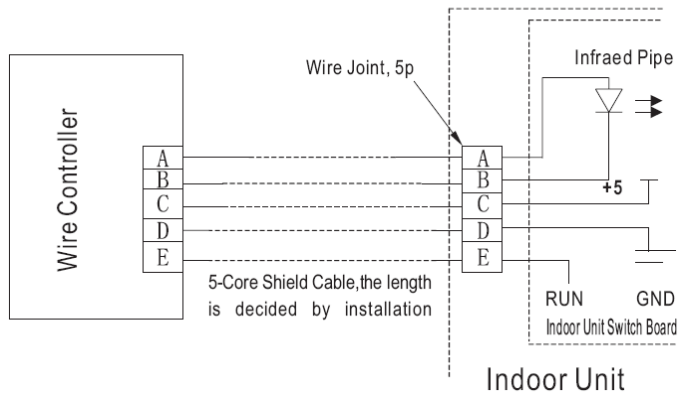
Push the button to set TIMER OFF, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0

4 CLOCK button:

Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When push the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then push button and to adjust hour; push the button CLOCK again, the minute part flashes every 0.5 seconds, then push and button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting

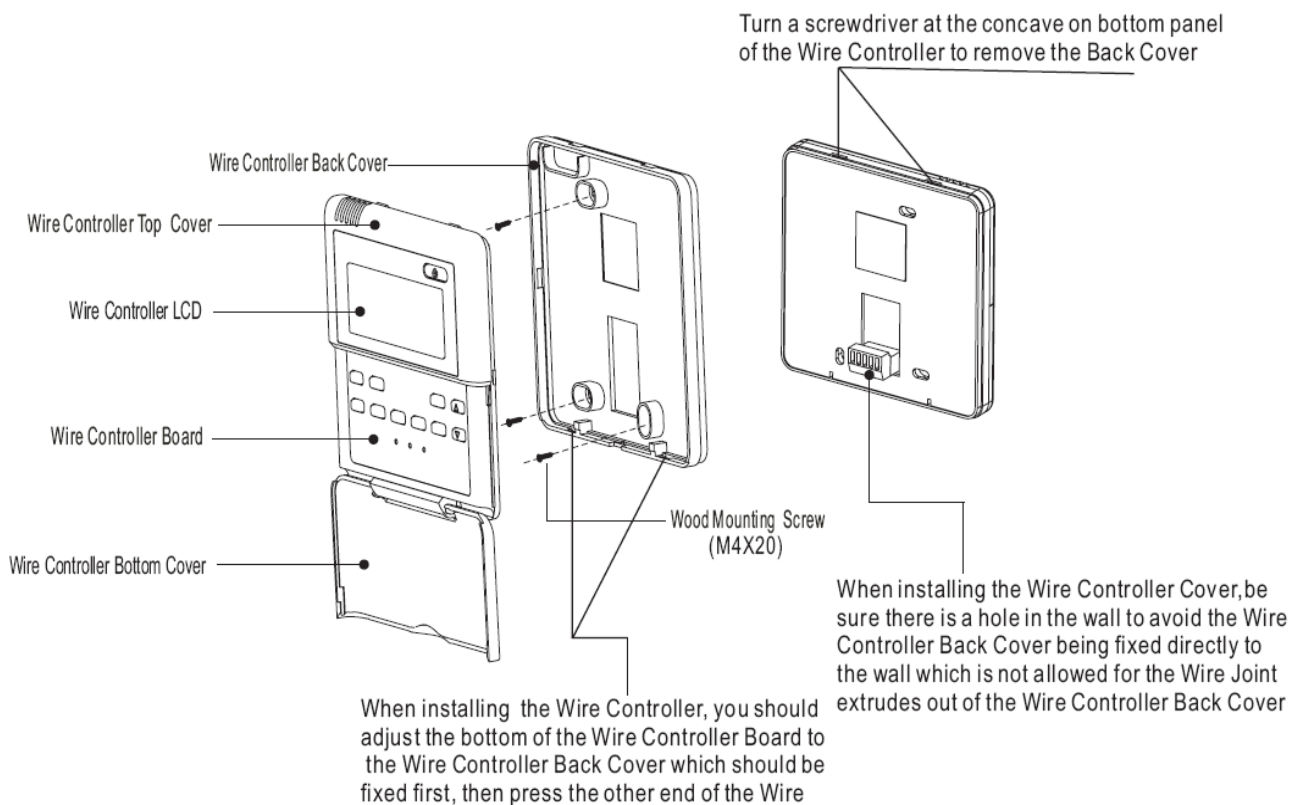
Installation

Wiring Principle Sketch:



Installation Notice:

When the air conditioner needs the constant frequency wire Controller, be sure adding a Wire Joint with 5 terminal named A, B, C, D, E in indoor unit, and fixing a infrared emitter whose anode and cathode connecting with A and B near the receiver in the Indoor Unit Switch Board, then connecting the terminal +5v, GND, Run in the Switch Board to C,D,E respectively.



NOTE

Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks. Please leave enough long cable for maintenance of the Wire Controller Board.